THE BUILDER

A RECORD OF ARCHITECTURE AND CONSTRUCTION.

WITH WHICH IS INCORPORATED THE "BRITISH ARCHITECT."

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THE RESTRICTION OF RESTRICTIONS.

WE are all writhing under restrictions of various kinds imposed during the war and since the war, and the business world is waiting and longing for their removal in order that it may get on with the peaceful reconstruction that is so much needed. These harassing war regulations should be got rid of ultimately, and we may be able once more to draw the breath of freedom so far as they are concerned, but there is another class of restriction, to which building is particularly subject, which does not profess to be of a temporary nature or to have been due to an emergency. We refer to some of the restrictions imposed by innumerable Building Acts and by-laws throughout the country.

The fact that these Building Acts and by-laws tend to increase the cost of building without sufficient corresponding advantage, but rather the reverse, is tacitly acknowledged by the Government, who have found it necessary to relax the stringency of the conditions in many cases in connection with their housing schemes, but the full effect of such restrictions has never been realised by the authorities who promulgated them or perhaps even by the building sections of the community or the general public, whose interests are the most seriously and prejudicially affected. Nor is the evil confined to the enhancement of the cost of all building, though in a period of stringency this is bad enough, but in many cases the restrictions, however severe, are quite ineffective. Take, for example, the case of concrete construction, the development of which has been so much impeded by unwise legislation: will anyone contend that accidents have been prevented by restrictions? Have they not rather been encouraged by permitting anyone to employ the material, whatever may be his qualifications or disqualifications, provided he comply with certain arbitrary conditions? Take, again, the laws controlling the height of ceilings in small dwellings, which have been very wisely relaxed by the Government. These laws, previous to their relaxation, made it impossible for anyone to design a modest, comfortable and unpretentious cottage, such as at one time abounded in our countryside, the compulsory height of ceiling converting what was intended for a cottage into a poor imitation of a suburban dwelling. Sanitation, of course, (in whose name how many crimes have been committed?) was the excuse for this enactment, encouraged perhaps by well-meaning officers of health, who produced calculations showing how many cubic feet of air were respired per hour by each human being. But an extra foot of height in a room will not eliminate this poison—at the best it will only very slightly dilute it—while it has been repeatedly pointed out that the lower room, because its doors and windows are so much nearer to the ceiling, is, in fact, better ventilated and therefore healthier than the loftier apartment.

Considerations of cost and comfort do not enter very largely into the deliberations of the framers of the by-laws, but the element of cost has necessarily weighed with the Government. But the element of comfort and the cost of fuel are matters that concern the tenant, that is to say, the elector, and as the predominant partner in the commonwealth he also may have something to say when he realises the position of affairs. A friend of ours, who for three or four months every year occupies a cottage built over a hundred years ago, in a remote country district, and, of course, with low ceilings, found that in the severest weather he was able to live in perfect comfort while his neighbours in modern cottages with the "benefit" of higher ceilings and every sanitary improvement were shivering with cold and subject to all the attendant ailments, while their expenditure on fuel was something like double his own. The fact is that the old-time country cottage was the evolution of centuries, produced by an intelligent and thrifty race of men and women, while the modern small dwelling is, in the opinion of competent designers, largely the product of theorists with very little practical acquaintance with the conditions attaching to such dwellings.

The circumstances of the agricultural labourer and of many other cottagers, have, we are glad to say, been greatly improved, and their dwellings must be at least equally levelled-up; but this brings us to the important question: "Who are the persons best qualified to effect such improvement?" On the one hand we have the architect with long years of training, who makes himself responsible for the health, comfort and stability of the building, not to mention the attractiveness of its appearance; on the other the County Councils who, having the power of legislation thrust into their hands, exercise it to the best of their ability. This raises the further question: "Why should the by-laws we refer to, which everyone knows to be harassing and restrictive, continue to exist as they are at present?" The effect of the restrictions generally is to impose unnecessary burdens upon every one. Take this example of the height of ceilings. There is first the additional cost of the building, which has to be paid for ultimately by the tenant, and then the cost of fuel is a serious item in the cottager's weekly budget.

Why then should even the most eminent architect have to make his work conform to a series of defective enactments and submit them for the approval of what may be a most incompetent tribunal? It may be said that there are also incompetent architects, and that plans are frequently submitted by those who are not architects at all. That is true; but why should, not only the art of design, but that even of building, be retarded for the sake of those who are the least qualified of their class? Because of these unqualified men we must have certain building enactments, but they should be the fewest, the simplest, and the least restrictive possible. What is the use of doing everything possible to develop the power of invention in our students if in after life it is simply to become atrophied by disuse?

The last word has not yet been spoken in connection with building, or with the art of design which belongs to it. Had the same principle of restrictive acts and by-laws as that we complain of been applied to other constructive arts our shipbuilding would never have been carried much beyond the canoe of the savage, our motor industry would have been arrested at something like the stage of the child's go-cart, and engineering, in the modern sense, would scarcely have come into existence. There are wide possibilities in connection with the various arts associated with building, and even if from their nature they offer less scope for development than some of the more strictly scientific industries, there is no reason why we should not avail ourselves to the utmost of such as do exist. We suggest, therefore, that the various building enactments should be simplified and greatly reduced in number. The safety and sanitation of building design and construction should be left to the men whose business they are, and who are the best qualified to deal with them, and restriction should be mainly confined to the exclusion of the incompetent, rather than to their control and regulation.

NOTES.

Building Contracts: The Proposed National Code.

ON another page we give an outline of the striking proposals of the National Federation of Building Trades' Employers contained in the document which has just been approved at a meeting of the Federation in London, a report of which appeared in our issue last week. The article is the first of a series specially contributed to our pages by a lawyer who has made a study of building contracts; and these articles will, we hope, assist in the clear understanding of the proposals of the Federation and their relation to the existing forms of contracts.

The President's Address.

THE address of the President of the Royal Institute of British Architects to students last week, makes admirable reading, and it is well this should be so, for many who could not hear it may notwithstanding read and profit by it. We can all enjoy the delicate irony and humour which Mr. Simpson never fails to express, but there is a really pertinent value in his address which we hope will be fully realised. We much appreciate his claim that students of art should learn the fundamental essentials as to the proper graphic expression of line, form and colour, and then the general principles of design which that first teaching will enable them to practise successfully. That students of painting, sculpture, and architecture, should be associated together in this preliminary education is, it seems to us, a thing we should all greatly desire, and so possibly pave the way for a constant and sympathetic association during the practise of their various arts; by this means we shall get better artists of all kinds, and shall be less troubled by foolish jealousy and misunderstanding. We cannot have a Michael Angelo, a Christopher Wren, or an Alfred Stevens for the asking; but we can do our best to compel the vision of all our students into a more catholic and generous outlook. With plenty of guidance like that Mr. Simpson gives and suggests, we should get appreciably much nearer our goal. All will join in the hope that the President's improved health is a happy augury for the future welfare of the Institute and the profession.

Architects' Fees.

THERE is surely nothing fresh to be said on the question of architects' fees, except—a practicable suggestion for a fair and decent scale and method of charge. But a return to the subject by Mr. Statham in the R.I.B.A. *Journal* will evoke a great deal of interest. He begins by pointng out that the present method is preposterous, because it makes the interest of the architect coincident with the cost, and illogical because it makes the fee proportionate to the cost, and not to the quality and amount of the architect's work. He would like the Institute to withdraw its blessing from the percentage system and have it generally understood that the client always makes terms with the architect as to his commission for every job beforehand, just as a painter quotes for a portrait. This system would also give the younger architects a better chance, for they would naturally charge less than highly-successful, well-known designers, and we quite agree with Mr. Statham that the most important and final ground for objection to the present system is that, whilst the architect is trained as an artist, he must be bound by a hard-and-fast rule as to charges whatever kind of work he is to do—in fact a sort of trade union arrangement. Is it not one of the difficulties that the older-established architect objects to free trade in design?

[The endless variety in design of the old towers and spires in Belgium is exemplified by two typical examples which we give herewith. Veere is one of the most delightful old buildings and has a picturesqueness of a very dainty sort.]

The Percentage Charge.

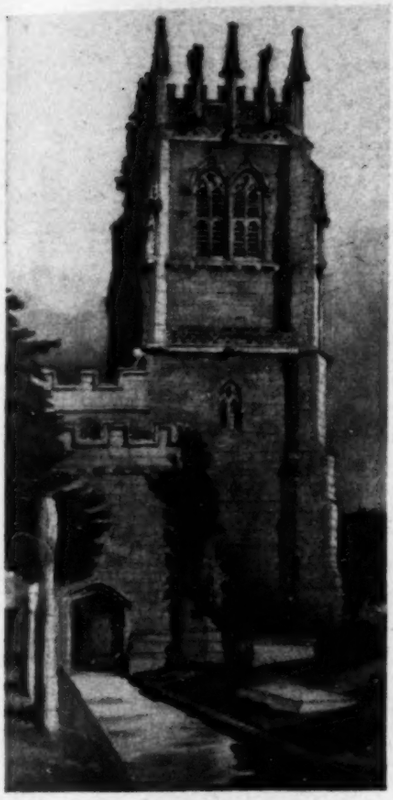
APROPOS of the fee question, take two instances. In one, an architect has to-day just finished a small alteration involving three or four hundred pounds. His client has heard always that an architect's charge is 5 per cent. His first disillusionment comes when he finds it has been raised to 6 per cent.; and his worst comes when he finds that he must pay 10 per cent. for work under £1,000. In another case, the design may be very largely for gardening work, summer houses, terrace walls, paths, &c. For this he is entitled to charge 10 per cent, and it is probably worth even more if he has painted a beautiful and lasting picture in garden design. But the client probably fails to understand why such troublesome work, which involves such thought and perhaps even change of treatment as the work goes, should cost more than 5 per cent.

Dr. Addison and Architects.

DR. ADDISON, at a recent meeting of architects, said there were "architects and architects." Well, possibly, there may be statesmen and statesmen! Architecture being a very complex profession, men frequently specialise in a particular branch. The planning of small houses requires particular study, frequently in inverse proportion to the size of the house. Have the authorities always been careful to select the right type of architect? We have heard of cases in which men skilled in domestic work and with knowledge of local requirements have been passed over and outsiders selected.

Economic Rents.

ALMOST each week brings with it some unexpected problem in connection with housing. For the most part the local authorities are alarmed at the prospects of the future, for they doubt their ability to obtain, even at the expiration of seven years, a rent which will approach to an economic figure, and they are still somewhat apprehensive as to the extent of their liability, despite repeated assurances from official quarters that it will not exceed 1d. in the £. It is therefore interesting to find a borough whose difficulty is of the opposite nature. The housing committee of a certain town feel confident, we are informed, of their ability to let their State-aided houses at a figure which will yield a satisfactory return upon the capital expenditure, though the tenants will hardly be of the working classes. It might be thought that even if the dwellings be not occupied by the working classes, at best the housing situation will be eased for them,



Gresford Church, Cheshire.
From a drawing by MR. LEONARD BARNISH, A.R.I.B.A.

because a general "stepping up" process will take place; but this appears unlikely, for it is thought that applications for these houses will be made by persons at present residing in large and expensive houses and flats, which will thereupon become vacant and useless, there being but little demand for that class of dwelling. What, then, is the local authority to do? If they refuse the economic rent which they might obtain, they are at once subsidising rents; a contingency which Dr. Addison has stated shall not occur. Yet, if they accept these high rentals they will not be assisting the class for whose benefit the Act was presumably passed. It is a delicate problem which the Ministry of Health will be obliged eventually to face.

"Luxury Building."

THE Ministry of Health announces that under the Housing Act, which was passed at the end of last Session, local authorities are given powers for prohibiting building operations which interfere with the provision of dwelling accommodation, but any person aggrieved by an order of the local authority may appeal to a Tribunal appointed by the Minister of Health. The Chairman of this Tribunal will be Mr. E. B. Charles, C.B., K.C., and the following gentlemen have accepted Dr. Addison's invitation to serve as members:—Sir J. S. Harmood-Banner, M.P., Mr. James Storrs, J.P., F.I.O.B., Chairman of the Industrial Council for the Building Industry; Councillor R. Wilson, J.P., Chairman of the Resettlement Committee of the Industrial Council; Sir John Wormald, K.B.E. Mr. Storrs and Councillor Wilson were nominated by the Industrial Council for the Building Industry, at Dr. Addison's request, as representatives of employers and employees respectively. The Tribunal will sit at the offices of the Ministry of Health, and meetings will be held in the afternoons after 4 p.m. Communications should be addressed to the Clerk to the Appeal Tribunal (Regulation of Building), Ministry of Health, Whitehall, S.W.1. The Ministry of Health points out that before entering into contracts, or beginning to build, promoters of new construction should communicate with their local authority. We may add that, whilst we are glad to see the name of Mr. Storrs on the Tribunal, we must ask how it is that no architect's name appears. Is it yet too late for the Institute to press for this? One cannot help wondering how it is that the services of architects are so frequently ignored.

St. Paul's Bridge.

APPLICATION is to be made to Parliament for an extension of the time required for the completion of the proposed new bridge. It will be remembered that a competition was organised by the Bridge House Estates Committee in 1914, of which the first premium of £300 was won by Mr. George Washington Browne, and the second of £200, by Mr. Charles E. Barry. The original estimate for the work was £1,646,000. It is probable that this figure will now be nearly trebled. In comparison, the sum of £500,000, even though followed subsequently by a further £200,000, which an Act of Parliament—passed in June, 1809—empowered the "Strand Bridge Company to raise for the construction of Waterloo Bridge," seems insignificant. In order to obtain a probable estimate of the toll which might be expected to accrue from the new bridge, daily counting took place for six weeks in 1808, and it was then shown that a daily average of 32,000 persons passed over Westminster Bridge, and 48,000 over Blackfriars Bridge. A similar set of statistics of the present-day traffic would form an interesting comparison.

A Protest from the British Medical Association.

THE British Medical Association resents "the Prussian thoroughness" with which Mr. John Murray seeks to demolish their premises at 429, Strand in order to construct the new Imperial Way, which forms an integral part of his Charing Cross improvement scheme, by linking up the Strand with Leicester-square. The Association points out, in its Journal, how, having narrowly escaped demolition by a German bomb in September, 1917, it is now to suffer this even greater indignity of premeditated destruction. But any scheme, we may remark, must be dealt with in a comprehensive manner if it is to be effective, and personal inconveniences and predilections cannot be considered, while it is incumbent upon those affected to adopt a broad and dispassionate attitude towards any scheme which may prove to be for the benefit of the citizens. If the anxiety of the Association be on account of its sculptured panels by Mr. Jacob Epstein, there is little doubt that these could be preserved to adorn the Association's future premises. The protest, however, is not without its compensations, for it is especially desirable to obtain an increased lay interest in architecture and town-planning. This is a case where good citizenship and direct personal interest demand an intelligent consideration in proposed London improvements.

EXHIBITIONS OF THE WEEK.

The Leicester Galleries; Jacob Epstein and the Sennefelder Club; Sir Ernest Waterlow's Paintings at the Fine Art Society.

THE past week has been one of special importance and interest in art exhibitions. On Friday and Saturday there were opened at the Leicester Galleries an exhibition of recent sculpture by Mr. Epstein, and at the same time the tenth exhibition of the Sennefelder Club for the advancement of artistic lithography; the same days saw at the Goupil Gallery, in Regent Street, the opening of the first exhibition by members of the Monarro Group; at the Fine Art Society a very attractive Memorial Exhibition of paintings and water-colours, by the late Sir Ernest Waterlow, R.A., R.W.S.; and on February 7, the private view of etchings and engravings by members of the Royal Society of Painter-Etchers and Engravers in their Gallery in Pall Mall East.

All these exhibitions are really of first interest, and, coming all together, make it difficult for the conscientious critic to do full justice to the merits of all. Mr. Epstein's works in sculpture at the Leicester Galleries are not numerous (some sixteen in all), but well selected. Most ambitious among them is the upright full-length figure of Christ, who points to the wound of the nail in his right hand; but the most brilliant work of this clever modeller—like Lanteri, a master of wax or clay—is in his portrait busts, notably the "Mrs. Jacob Epstein," which we noticed already in the International, and the head of an "American Soldier"—admirable in its handling and character. The rendering of the ears here, and the way the hair is indicated, is masterly; the busts of "Betty May" and "Lillian Shelley" are to be noted.

The Sennefelder Club exhibits nearly 150 lithographs; notable among these are the works of Helleu, Forain, Signac, Spenser Pryse, McClure Hamilton, Brangwyn, Manet, Steinlen, and four wonderful lithographs from the "Tauromachia"—the Bullfight series of the great Spanish Goya. The Monarro Group at the Goupil Gallery represents those artists who, directly or indirectly, have drawn their inspiration from the leaders of the French Impressionists, Monet and Pissarro. Among those appearing here are J. P. Manson, Maximilien Luce, Signac, Clemants Hassell, Pysselberghe and Lucien Pissarro.

In the paintings of Sir Ernest Waterlow we seem to pass into an atmosphere of tranquil beauty. One of the most distinguished of our British landscape artists, he became an Associate in 1890 (for his high merit was early recognised), an R.A. in 1903, and six years earlier had succeeded Sir John Gilbert as President of the Royal Society of Painters in Water-colours. He did not confine himself to English subjects, and, in fact, among the paintings here are some charming studies of the Somme in France and the "Côte d'Azur"; but he seems peculiarly at home, above all in water-colour art, in such themes as English down-land, seen against a line of distant sea, such as his "Ditchling Beacon," "Pevensey Bay from Crowhurst," and, varying a little, his most beautiful "Junction of the Severn and the Wye."

GENERAL NEWS.

Professional Announcements.

Mr. H. W. Woodcock has now been demobilised, and is carrying on his practice as a surveyor at Imperial Buildings, Ludgate-Circus, E.C. 4 (telephone, City 3,790); and not at No. 8, Princes-street, S.W.

Messrs. Victor C. Martin and F. Stanley Griffith, quantity surveyors, have entered into partnership, and will practise at 17, Bedford-row, W.C. 1.

Engineer Planning.

A correspondent writes:—"The tube railway stations are examples of engineer planning. You go down the lift, then, frequently, commence to scale up some stairs; after traversing long corridors and going up and down more stairs you eventually arrive at the train."

Obituary.

The death took place at Chelmsford, on January 31, of Mr. Frank Whitmore, formerly for many years county architect for Essex. He was in his seventy-ninth year. He was Mayor of Chelmsford in 1893, and was for many years a member of Chelmsford Town Council.

The death is announced, at Moseley, Birmingham, of Mr. Ewen Harper, F.R.I.B.A., Mr. Harper designed many large buildings in Birmingham, including the Central Hall in Corporation-street.

Non-Ferrous Materials.

The following stocks (exclusive of old metal and scrap) were in the possession of the Minister of Munitions on February 1:—Soft pig lead, 45,348 tons; refined spelter, 8,697 tons.

Profiteering in Building Materials.

A Special Committee has been set up under the Profiteering Act to make an immediate investigation into the cost of building materials and the operation of trusts and combines. The Committee will include representatives of the Association of Civil Engineering Contractors and the National Federation of Builders. The first meeting will be held on Monday next.

Architects' Loyal Addresses.

The Royal Institute of British Architects has presented to the King an address of congratulation on the termination of the war, on behalf of the architectural societies of the United Kingdom and the Dominions, which His Majesty has been pleased to receive.

The Society of Architects has presented a congratulatory address to the King and Queen to mark the same event, and this their Majesties have accepted.

Employment for Ex-Service Architects.

The Society of Architects has recently dealt with demands for capable assistants from upwards of ninety employers. The Employment Register is maintained at the expense of the Society, and all service has been rendered gratuitously to the many candidates who have benefited by it, the measure of whose gratitude may be weighed from the fact that the Society has, during the period mentioned, received one letter of thanks! The use of the Register, which was for the time being open to all architects, is now restricted to members of the Society, it being felt that the requirements of other architects may be met by other organisations.

Rochester Cathedral.

It has been decided to appoint a committee to launch an appeal for a sum of £24,000 for the purpose of restoring and repairing Rochester Cathedral. The restoration scheme adopted has been prepared by Mr. Temple Moore, F.R.I.B.A., who expressed the hope that no attempt would be made to patch up the old roof, and outlined a scheme for a new roof designed to increase the beauty of the interior. The scheme provides for an expenditure of between £9,000 and £10,000 for the roof; £2,750 for the panels and coping; £2,000 for the repair and improvement of the organ; and £2,500 for a new reredos.

The Central School of Arts and Crafts.

The course of lectures on "Art and the Community," at the Central School of Arts and Crafts, Southampton-row, W.C., has been slightly re-arranged, as follows:—February 17 and March 16, Mr. Charles Spooner on "Furniture"; March 2, Mr. Luther Hooper on "Textiles"; April 20, Mr. S. B. Caulfield, F.R.I.B.A., on "Urban and Rural Amenities"; May 4, Mr. Luther Hooper on "Dress Materials and Dress"; May 18, Mr. S. B. Caulfield on "Household Utensils"; June 1, Mr. Charles Spooner on "Gardens"; June 15, Mr. S. B. Caulfield's final address. The lectures take plalce at 5.30 p.m., and admission is free.

AN ANCIENT FONT.

THE drawings below show a font which was found near the ruins of Bannow Church, Co. Wexford. Bannow was a seaport town of some importance and was founded by those who accompanied Strongbow in 1171, who is supposed to have landed near the site. Nothing now exists of the town except the ruins of the church and castle; there is a record of the streets, but no record as to why the town ceased to exist. On the opposite side of the Bay, the Abbey of Tintern, named after that in Monmouth, is situated. For many years this has been used as residence of the Family of Coclough, to whom Queen Elizabeth gave it. A somewhat similar font will be found at Fethard Church, not far from Tintern, which was taken by the last Abbot of Dunbrodie, who was subsequently rector of Fethard. The history of the South of Wexford is full of interest, and those who desire to become acquainted with its history cannot do better then refer to Phillip Hores' history of Wexford.

SKETCH BY CH. COOPER M.I.C.E. 1919
FROM RUBBINGS TAKEN IN 1888

Scale.

CORRESPONDENCE.

The Royal Institute, the Society of Architects, and the Bridgwater Housing Competition.

SIR,—My attention has been called to a letter from Mr. H. Bryant Newbold in your issue of January 9. Mr. Newbold asks why we could not discover the unsatisfactory nature of the conditions of the Bridgwater competition before Competitors had completed their drawings. Our answer is that the question would not need to be asked if architects would back up the Competitions Committee and help to protect their own interests by observing the rule laid down in the second paragraph of the Competition "Regulations," which reads: "Members of the Royal Institute of British Architects and allied societies do not compete excepting under conditions based on these Regulations."

If architects would at once return the conditions of unsatisfactory competitions to the promoters, and at the same time notify the Competitions Committee, the difficulty Mr. Newbold alludes to would never arise. By accepting unsatisfactory conditions and beginning work on the drawings, architects only encourage promoters to disregard the "Regulations."

Mr. Newbold also thinks that we should have "prohibited" the employment of architectural assistants by Borough Surveyors. I fear that he has a flattering but exaggerated idea of our powers.

IAN MACALISTER,
Secretary R.I.B.A.

SIR,—I had intended to reply to Mr. Newbold's two questions in his letter published in your issue of January 9, but just at the moment I was unable to give my personal attention to the matter. In regard to question (1), may I say that the Society issued its notice in regard to the Bridgwater competition immediately it became aware that some of the conditions were unsatisfactory. I am aware that at least one member of the Society had his drawings practically completed, but he very loyally withheld them for the time being, and no doubt other architects did the same. May I suggest that it would be a great help to the Society if architects would draw my attention at once to any local competitions, and send me, if possible, a copy of the conditions? because, although every endeavour is made at this end to obtain particulars directly they are issued, the Society is not infallible, and occasionally particulars are not to hand so early as they might be. I think it would also be a great help and tend to do away with the grievance which Mr. Newbold complains of if architects would refrain from preparing drawings where the conditions or any of them are obviously unsatisfactory, until they have been brought into line.

In regard to Mr. Newbold's second point, as to the architectural bodies securing the architect a share in the housing work at least equal to that of the officials of local authorities, I would point out that the Society approached the Ministry of Health in the early stages, urging that State-aided housing schemes should be placed in the hands of independent practising architects. The Society followed this up by circulating the whole of the local authorities in the United Kingdom twice on this point and on others; and, therefore, it was not for want of pressure on the part of the Society of Architects that what Mr. Newbold describes as a scandal in regard to the local authorities appointing architectural assistants to help their officials arose. The Society's activities in this respect have received a very wide publicity, both in the professional and the lay Press, and it is a tribute to the Society's success that a contemporary pays the Society the compliment of complaining that it has been the most active of the architectural bodies in what they describe as a determined effort to obtain a monopoly of the housing schemes throughout the country, and they go so far as to suggest that the Society's action is unprofessional and suggests that it is touting for work for its members. What is one to do when, on the one hand, some architects suggest that the Society of Architects is not sufficiently active, and other people complain because their activities have met with too much success from their point of view?

I notice that most of the criticisms which are directed occasionally against the Society are usually destructive and come from members of the profession who are not members of the Society; but why do not these critics make some constructive suggestions as to how the defects to which they draw attention might be remedied? They would find the Society very receptive of any hints which would enable it to take more effective action in matters which it conceives to be of interest to the profession. It may also occur to some of these critics that by becoming members of the Society they would assist still further in promoting its main objects—one of which is to benefit the profession in general, and another to protect the professional interests of its members.

C. MCARTHUR BUTLER,
Secretary of the Society.

Wages in Belgium.

A correspondent in Antwerp writes:—"The workmen (in the building trade) receive, since February 1: masons and bricklayers 1.75 fr. per hour, and next June it is agreed they are to have 2.00 fr. per hour. Labourers assisting masons and bricklayers receive 1.50 fr. Joiners receive the same as masons. This is for an 8-hour day with half day on Saturday, and they call it the "English week." Strikes have taken place in all branches. What has conduced to these rises in wages is that many masons, bricklayers and joiners have gone to the north of France, where they receive 2.50 fr. and 3.00 fr. per hour."

EDINBURGH ARCHITECTURAL ASSOCIATION.

Gardens.

A lecture was delivered by Mr. James Salmon, F.R.I.B.A., to the Edinburgh Architectural Association at the College of Art last week, on the subject of "Gardens," illustrated with lantern views showing some of the great gardens of Italy, Spain, Holland, France, England and Scotland. The lecturer said that, given a garden, a man had already built half his house. A garden was half-a-dozen rooms in one, smoke-room, nursery, playroom, gymnasium, washing-house, reading-room and much more. To increase the use of Scottish gardens, he suggested log fires in the open; a stone hearth in a part sheltered from cold winds and surrounded with natural couches on which, wrapped in plaid one could recline. There were faint signs of a revival of interest in garden designing in Scotland. All that was required was opportunity.

COMPETITION NEWS.

Skipton.

FOR THE WAR MEMORIAL COMMITTEE.—Designs for a monument, to cost about £3,000. Sending-in day, February 28.

Chatham.

FOR THE BOROUGH COUNCIL.—Designs for a lay-out for the housing scheme. Sending-in day, March 8. (See our issue for January 30).

Accrington.

FOR THE WAR MEMORIAL COMMITTEE.—Designs of a war memorial. Premiums, £100 to £50. Sending-in day, March 14. (See our issue of Feb. 6.)

Truro.

At a meeting of the Education Sub-Committee of the Cornwall County Council, the report of the assessor appointed by the President of the Royal Institute of British Architects, Mr. H. P. Burke Downing, F.R.I.B.A., of Little College-street, Westminster, upon the seven designs submitted by architects practising in Cornwall in the competition for the erection of a secondary school for girls at Truro, was received. The Assessor's award, which assigned the first place to No. 6 in the competition, was unanimously adopted. This design is by Messrs. Cowell & Drewitt, of Penzance. Messrs. Cowell & Drewitt were accordingly appointed to carry out the work.

In his report, the Assessor, in commenting on Design number 6, says:—"The drawings present an extremely well-thought-out scheme. The main building is well situated on the site, the entrances and exits are well placed, and the plan solves the problem of arrangement of the Classrooms and Hall in a very workable manner, and one most helpful to good school administration. The scheme is an economical one; corridors are short, and there is no wasted space; the buildings are well lighted and ventilated; the drainage is efficient, and the arrangement on the site secures to the full all advantages of aspect. The design is simple and expressive." The author estimates the cost at £25,903 6s.

HOUSING CONFERENCE.

A CONFERENCE to discuss the housing problem was held by the Royal Institute of British Architects at Olympia last week was opened by Sir Aston Webb, P.R.A., supported by Dr. C. Addison, Minister of Health, Sir Kingsley Wood, M.P., Major] Harry Barnes, M.P., F.R.I.B.A., Mr. S. B. Russell, and others.

DR. ADDISON said that apart from the difficulties of labour and finance, there was no reason why the 200,000 houses required should not be erected or in course of erection at the end of this year. The Royal Institute of British Architects had always given ready help in housing matters, but all architects did not show a regard for economy and speed. In one scheme a saving of £2,000 had been effected on roads alone, and in another case a saving of £10,000 had been effected on a scheme of 300 houses. In the present emergency, new and cheaper methods of building would have to be adopted, and the traditional outlook and habits of the people would have to be altered.

On the following days, several papers on the housing question were read, of which we give abstracts below. Papers on "The Difficulty of Obtaining Contracts," by Mr. F. M. Elgood, O.B.E., F.R.I.B.A., and "Economies in Planning, and the Employment of New Materials," by Mr. W. A. Harvey, F.R.I.B.A., are given elsewhere in this issue.

Housing Finance.

SIR JOHN FERGUSON, who is organising the forthcoming issue of housing bonds, read a paper on the "Financial Aspects of the Housing Problem," in the course of which he said that the problem was primarily a local rather than a national one, and they must look to the spirit and energy of local authorities whose credit had not been subjected, at any rate only indirectly, to the strain of the war, to provide the capital required to finance the huge housing schemes. There should be no difficulty that could not be surmounted in raising the necessary money in many areas, and he mentioned that in some districts, especially in the Northern industrial areas, local authorities had been able to raise large sums locally. In such cases the money came from the resources of the community in the area where the new houses were to be built, and was invariably obtained at lower rates of interest than was yielded by Government securities. Local patriotism entered into the matter, and it was a fair assumption that local patriotism was capable, in varying degrees, of being engendered in all localities. It was to facilitate that result that the Act sanctioning the issue of local housing bonds had been passed. The rate of interest, to be announced later, would apply to bonds issued to all authorities and competition between different authorities would thus be eliminated. The Housing Acts had improved the status of mortgage loans, and if local authorities had power to issue local bonds the mortgages and rates subsequently issued by those authorities would become trustee securities. This was a very valuable provision, which would open out to such authorities a much larger field for investment than they had hitherto enjoyed. In spite of the attractiveness of the housing bonds as an investment, it was thought desirable that a strenuous campaign to popularise them should be organised simultaneously throughout the country, and it was hoped that every endeavour would be made to secure the widest possible support. The Minister of Health hoped that local authorities would be prepared to sell their houses, when built, and encourage individual ownership. This would be a valuable factor in encouraging the small investor, and the fact that the bonds would be accepted at face value in part payment for houses acquired from local authorities would help to attract subscriptions from the people who would occupy the houses.

The House Beautiful.

MR. W. G. NEWTON, M.A., dealing with the æsthetic side of housing, said that the erection of houses which would be comely and pleasant to look upon was met by two objections—"don't want" and "can't afford." The practical members of housing committees laid stress on the convenience of interior planning, and quite rightly; but true beauty was not contrary to convenient planning, or even something added to this quality, but the outcome of a dainty and sensitive solution of all these and other factors. It must be borne in mind that houses were not merely places where people washed, cooked, ate and slept, but where lives were lived. The surroundings of a coming generation were in the hands of those responsible for housing schemes to-day, and in the question of housing it should be seen to that our ideas did not lag half a generation behind the times. The objection to beautiful houses on the ground of the extra cost arose from a misconception that beauty was something added to a plan and elevation as so much per cent. It was rather a way of arrangement, a grouping of masses and openings, of blanks and detail, and a choice of material and colour. Given simple London stocks, good tiles, or even slates, deal for door and window frames, a little paint and a great deal of thought, a very pleasant house could be produced.

The lay-out of new schemes must be on broad and simple lines, and the breaks and diversities in scale with a street, a road, or a group—not with the restless protuberances every few feet which came to a diseased mind thinking in terms of a single elevation. This single elevation might be repeated a hundred times in a road, and that which was only unpleasant in one house would become a nightmare. The houses themselves must be on a small scale, but the proportions dainty and simple.

A village of a thousand houses was a large and complicated matter. Wide roads, houses eight or twelve to the acre, gardens, and the arrangement of the houses in small groups were established conditions. All these were good, but fussiness and untidyness must be avoided. The houses must be kept in scale with the whole street. They must be grouped in general masses, with intervals and recesses in scale with the street in which they stood. Groups with more than two houses were desirable, as they gave calmness and simplicity, and also afforded one another more shelter in gales. The communal idea should always be kept in view in planning new villages or suburbs, which should always contain clubs for both men and women, public houses on the same lines as *estaminets*, church, sports ground, sheltered gardens for old people, and a place for a band-stand. The children's playground should be in the middle of the gardens, out of the way of traffic.

In the exteriors of the cottages themselves, there were four elements to be considered, viz., walls, openings, roofs and chimneys. An overwhelming number of materials for walls had recently been suggested, and it should be possible to make something pleasant of any material. For instance, corrugated iron placed vertically and painted cream or grey, or even blue slate with simple windows, was very pleasant, as also was concrete with the lines of the shuttering left on. Wood was certainly a charming material, as witness the old houses all over the southern counties. Things to bear in mind were simplicity of design, the use of one colour and texture (except in cases where two bands of material were used), and everything that helped the long low appearance was valuable. Some of the "mill-cut" houses, with over-projecting eaves, fussy ornament and deep verandahs, were out of tune with English weather. Other things being equal, local materials were the best; they were the stuff of the earth, and always seemed at home. No small country was richer in its variety of building materials, and, keeping in mind the proportion of the whole, we could use this richness to get variety in a village street. The variety, however, should not be in the individual houses (except in the case of traditional varieties, such as tile-hung or weather-boarded upper stories), or we should get fussiness and, in the mass, acute discomfort.

It must be remembered that a wall was a flat surface, and in this its value lay. It was a foil to the shadow of the eaves and the delicate detail of the lower openings. The openings were most important, and the greatest care must be taken to get things right. Whether windows were sashes or casements they should be set well forward to the front surface of the wall, so that they could catch the ever-changing shade of light in the sky, and seemed to be looking out. Recessed windows had a dull shadow around them. Any house could be spoiled by wrong windows, which should be as small as they reasonably could be; 10 per cent. of the floor area was unnecessarily large. The surroundings should be as simple as possible, so as not to over-emphasise. It was quite sufficient to have a simple head, such as bricks on edge, to avoid the feeling that the wall was crushing down on to the window, and a simple sill, such as two courses of tiles. The door either welcomed or repelled, and provided opportunity for a little delicacy of detail, proportion and colour. It must not be too high, with an air of ill-bred effusiveness or so low as to be churlish. Generally the head should range with the head of the window. A simple porch with a hood gave shadow and shelter from rain, particularly if the doorway were planned back from the face of the house, say, 18 in. along the passage. If colour were used for the doors, it should not be varied house by house, but kept in proportion to the whole street.

Of all the elements of a small house the roof was the greatest unbroken mass, and its colour, texture and shape were of importance from the point of view of effect. Pitched roofs were often objected to on the ground that they took a lot of material and wasted space. A flat roof might be made attractive by a simple brick parapet or a glimpse on to it through light iron railings, where might be placed scarlet flower pots or simple posts for a light awning in summer, but it had several drawbacks, such as the cost of waterproofing material, its lesser heat and cold-resisting properties, and the fact that an additional staircase must be provided if it was to be used. For pitched roofs, corrugated iron in simple grey ridges was pleasant, but would rust in time and always look temporary and shoddy; thatch was quite good in the country, but thatchers were few and far between; the various forms of rubber or asbestos sheeting detracted from the appearance of solid cosiness which should be aimed at. In the majority of cases we would come back to the use of tiles or slates. Roofs got their interest either from the silhouette of ridge and gable and grouped chimneys, or by emphasising the line where the roof joined the walls. Pantiles, laid in mortar were glossy and comfortable, but they should not have to be cut for hips and valleys. The red, shiney, machine-made tiles tended to flake in front and were abominable to look upon. Sand-faced, hand-made, red tiles would last for generations, and looked as though they covered a home. All kinds of slates might be used pleasantly and well, whether on a roof (in which case they should be graduated smaller towards the ridge) or hung like tiles.

No one knew how to build chimneys better than our ancestors, and we should not go far wrong if we aimed at their simple massiveness,

although we must spare the bricks more than they did. Personally, he would like to see a proportion of chimney-less houses with inconspicuous flues, as in some Italian villages, to carry away the fumes of gas fires.

Beauty added nothing to the cost of a house; it was the right admixture of the elements at hand. The beautiful house was also a thoroughly efficient house, where as little waste labour as possible was necessary; where the fires started with a tap and the lights with a switch; where floors and partitions did not harbour dirt; where windows opened, the passages were airy, and the door suggested a welcome. The subtle appeal of a house and its effects on the outlook on life of those who lived in it were manifold.

[Mr. Newton asks us to state that the above lecture was primarily intended for an audience of 500 or 600 local authorities' delegates; it was, however, delivered to an audience of 53, of whom only two, he says, are known to have been delegates!]

The Preservation of Old Cottages.

In a paper on the preservation and repair of old cottages and villages, MR. H. A. TIPPING said that in the present practical age no subject with regard to the housing problem required more attention than the repair and improvement of existing cottages. Owing to difficulties of transport, materials and cost, new building would proceed slowly, and under these conditions it was essential that we should preserve what we had. In addition to the æsthetic side of the question it was desirable to repair the old cottages for practical reasons, but the Rent Restrictions Act had made it almost impossible for anyone except very wealthy people to keep such property in adequate repair. One of the most important things in the present housing crisis was that Parliament should see that landlords did not lose by keeping cottages and houses in good condition. It would be allowed by even the most practical people that our rural homes were one of our national assets. Journeys were constantly being made to view our beautiful old villages, the charm of which was not merely recognised by artistic people, but by perfectly practical and business-like people. They were to a great extent an epitome of English building and handicraft, and if one wanted to see what our ancestors did and how they solved all sorts of structural difficulties, no better way could be found than to inspect our country cottages. They were built by local men to suit local convenience and requirements, and were constructed with local materials, with the result that they fitted in with the atmosphere of the district and seemed to belong to the place. They were not built by the dozen, and each cottage and village had an individuality of its own. The idea of local people using local materials had to be considered more than ever now, as the difficulty of transport was so great that it was economically sound to raise houses out of the ground on which they stood. *Pisé-de-terre* construction, which was coming into prominence and was very suitable for rural districts, was an example of this revival. Many of the old cottages, at present in a dilapidated condition, could be made as efficient and labour-saving as those passed by the Ministry of Health at one-fifth of the cost of erecting new ones.

Difficulties of Transport and Materials.

MR. E. J. DROWER, referring to the straits to which the building industry was brought at the end of the war, said that there were no stocks worth mentioning at that time. Freestone quarrying had been almost stopped, and so had slate quarrying; most brickyards were out of commission, and others were working much under their capacity; timber stocks were very low, and the stocks of light castings were almost exhausted; nails, white lead and the like small items simply did not exist. Everything had to start afresh, and the first trouble was finance.

Bricks.—There was a call for subsidies, and the Government, he thought wisely, set its face against this method. The Government gave firm orders at prices which would ensure a profit to the brick-makers. Payments were prompt and liberal, and help was given in other ways, such as the allocation of coal and priority of machinery. At the beginning of last year the country's output of bricks was at the rate of 550 millions per annum; at the present moment it was at the rate of about 2,500 millions. Assuming that the great bulk of the new houses would be built of brick, the entire output of the country would build only about 110,000 houses—about half the number required. Before the war the output was calculated at about 4,000 millions, but even if we could produce this number now, could they all be allocated to housing schemes? But it was very doubtful if this output could be brought about, although it might be perfectly possible in the next three or four years providing sufficient labour were forthcoming. A revolution was taking place in the brick trade in the general adoption of modified Hoffmann and analogous kilns, enabling brickmaking to be carried on all the year round. Thus, the output of the yards had been increased, very largely compensating for the suppression of the smaller yards. He estimated that 2,500 million bricks per annum would be required shortly in essential and useful services. Adding to this the housing programme (assuming that the houses were built of brick) about 7,000 million bricks would be required. Even that huge quantity could be produced within a few years, but not on economic lines. A considerable sum would be spent on equipping brickyards solely for housing schemes, and as soon as these requirements had been met the yards would have to be closed, for lack of demand.

Alternative Methods.—The way out lay in the use of alternatives to bricks. Bricks would always be found the best, most convenient and cheapest material in many districts. The country abounded in building stone, and it was quite within recent years that its use had been abandoned in favour of brick in many stone districts. In North Wales there was a super-abundance of slate rubble, and for foundations or the outside skin of external walls it was excellent.

Cement.—If cement were to be used in the way in which it had begun to be used, the quantity required would reach 1,450,000 tons for 200,000 brick-built houses. The average yearly production for 1911-12-13 was about 3,000,000 tons, and of this we exported 716,000 tons. At present we were producing cement at the rate of 2,200,000 tons per annum, and this was increasing. Cement manufacturers could not supply the urgent demands for cement. Several factories had been closed during the war owing to the introduction of new plant, and this, together with shorter working hours, reduced output and bad coal tended to keep our capacity of production at its old low level. There was little to be hoped for from imports. If concrete construction were adopted for all the 200,000 houses the total quantity of cement required would be nearly 3,000,000 tons, and if the houses were of timber, except foundations, surfaces and chimneys, we should require about 500,000 tons. It was entirely unnecessary to use cement in the lavish way in which it was used. There was plenty of good lime in the country, and it might surely be used for internal walls and for rubble walls. Being a local production, it would also save transport. The outside stucco and rough-cast of brick walls need not always be in cement. The use of concrete for buildings was not so economical as many people imagined, and the limited supply of cement should cause its use to be prohibitive for walling in those parts of the country where brick and stone were abundant. The speculative builder, who formerly provided the great bulk of the houses of the working classes, used cement to an almost negligible extent. We might not be able to revert altogether to his methods, but we could copy some of them with advantage and limit the use of cement to where it was essential. The use of cement was extending very rapidly, and it was now used for many purposes for which lime would previously have been thought good enough. New methods of saving cement should be studied, and the lecturer pointed out that many of the architectural monuments of the land, including the cone of the dome of St. Paul's Cathedral, were built with brick and lime mortar. Slag cement had been improved, and it could now compete with Portland cement for many purposes. But, unfortunately, its manufacture had almost ceased because the right sort of coal could not be obtained.

Slates.—With regard to roof coverings, tiles, and slates were used about equally. The slate quarries were closed during the war, and the gaps in the ranks of labour in that industry could not be filled. The shortage of labour was to a certain extent compensated for by the use of improved machinery. In 1913 the output of slates was 250,000 tons, while last year it was 150,000 tons.

Tiles.—During the war the tile industry had been stopped entirely, and there did not seem any great grounds for hope that the position would be much improved.

Prices.—There were three factors governing the price of materials, viz., wages, associations of manufacturers, and competition. The restriction of output by workmen increased prices, prevented the housing scheme from developing, and made what was done atrociously dear. Restriction of output by manufacturers was also not unknown, and when that happened for the sole reason of keeping up prices it had no excuse whatever.

Transport.—Canal traffic could be set aside with the pious hope that the facilities of water transport would be taken advantage of in the near future. The railways were not doing what it was the business of railways to do. Necessary supplies were kept back, trains were delayed for days in sidings, and goods sometimes took weeks on their journeys. The number of trucks now running was within a small percentage of the number before the war, so that the cause of railway delay must be sought elsewhere. Shorter hours of work and discontent among the railwaymen accounted for part of the mischief, and terminal delays accounted for another part. A great deal of good could be done by contractors making it a serious part of their duty to watch goods consigned to them and to importune the railway companies in cases of delay. For distances up to 15 miles, road transport would probably supersede railways. Motor lorries could take goods direct from factory to site, thus eliminating much handling of material; but a 7-ton tractor now cost £6 10s. a day for hire, and a 20-mile journey with full load and an empty return took a whole day—thus the price became prohibitive. The question should not be allowed to rest, and a combined and continuous agitation should result in the introduction of more scientific methods of carriage.

A Working-class View of Housing.

MR. J. P. LLOYD (President of the London District Branch of the National Federation of Building Trades' Operatives) gave an address on "Housing from the Working-man's Point of View," in the course of which he said that the great difficulty in the past had been that anything attempted for the working-classes had always been attempted and carried out without considering the working-classes. To-day, the working-classes had decided that when anything was to be done for them they would themselves have a voice in the matter, and say how and when it was to be done. The housing problem was not of mushroom growth, but had existed for many years. The working-classes were tired of Parliamentary interference in questions affecting the lives and souls of the people. The working-man's grievance was that in the early part of 1917 the Ministry of Health set up its reconstruction scheme, but very little had been done. If sane men had been advising the Ministry during the past four or five years, the difficulty would not have arisen. The operatives were always willing to assist in what was essential for their own class. They were trying to limit the hours of labour for the reason that

the private employer had used overtime for the purpose of deriving a greater profit, after which he had been able to throw his workmen on the streets. The operatives had come to the conclusion that they were not going on the streets again if they could help it. They now felt that they had got a little control of their industry in their own hands, and they would not allow employers to do so much as they liked. If the operatives got continuity of employment they would do all that was necessary towards reconstructing the State, but they declined to persist in making huge profits for private builders whilst they themselves were short of money. The employers said that they sympathised with the men, but the men did not want sympathy. He wanted to see the British workman rise to a position of independence.

In the past misunderstandings had been the cause of serious consequences. A few years ago the working-man was told that he did not want a parlour; that only showed a hopeless ignorance of the working-man. For the various types of workmen various types of houses were wanted, and it was very important that the new houses should be of sizes to suit all classes, from the labourer upwards. The workman in the future would object to a house in which he could not live. It was an insult to ask them to accept bedrooms 9 ft. by 6 ft.; such small rooms were not conducive to health or tidyness. The working-man's wife—like every other woman—loved a cupboard, and plenty of large cupboards should be provided.

In the past it had never been considered that the working-man wanted water at all. They were told that a bath was unnecessary, and at the same time they were told that they were not clean. If baths were installed at all, there was very often no means of getting a bath. The working-classes now thought they had a right to the best, and would not be content with the old conditions.

Although there might be a certain slackness in regard to general building work, the operatives were willing to do all that was necessary in so far as housing was concerned, providing that the State so regulated the trade that the speculative builder would not have the right to say when and where building operations should take place. He was concerned also that he should have his share, not only of the work, but of the profit. The building trade operatives had arrived at a peculiar position, and if this developed along the lines he expected it would, it would be well worth watching. In certain towns the operatives' federations had decided that, instead of allowing the builders to employ its members, they were going to ask the clients to employ them directly. If the National Federation of Building Trades' Operatives was alive to the situation and was willing to become the proprietor of the labour of its members, this movement would create an industrial revolution. He would impress upon the operatives, however, that if they accepted the responsibility of being the direct employers of their own labour, they would have to use all the energy, all the strength and all the resources they were capable of for the purpose of wiping out of existence the competitive system. In Manchester the operatives had decided to compete and tender for the erection of so many thousand houses, and in London they intended doing something on similar lines.

The operatives believed that all the talk about high prices of labour and materials was really so much bunkum, and they thought that if they stepped into the breach they could build houses more cheaply. They felt that the housing problem had to be dealt with on the lines of co-operation between the people who wanted the houses and those who were going to build them. If any attempt was made by the Government or local authorities which the building trade operatives thought would revert to the old conditions of slumdom, they would simply refuse to build the houses.

The housing of the working-classes was the soul of the whole social problem, and until the people were decently housed the social reconstruction of the country could never come about.

Leading Contents.

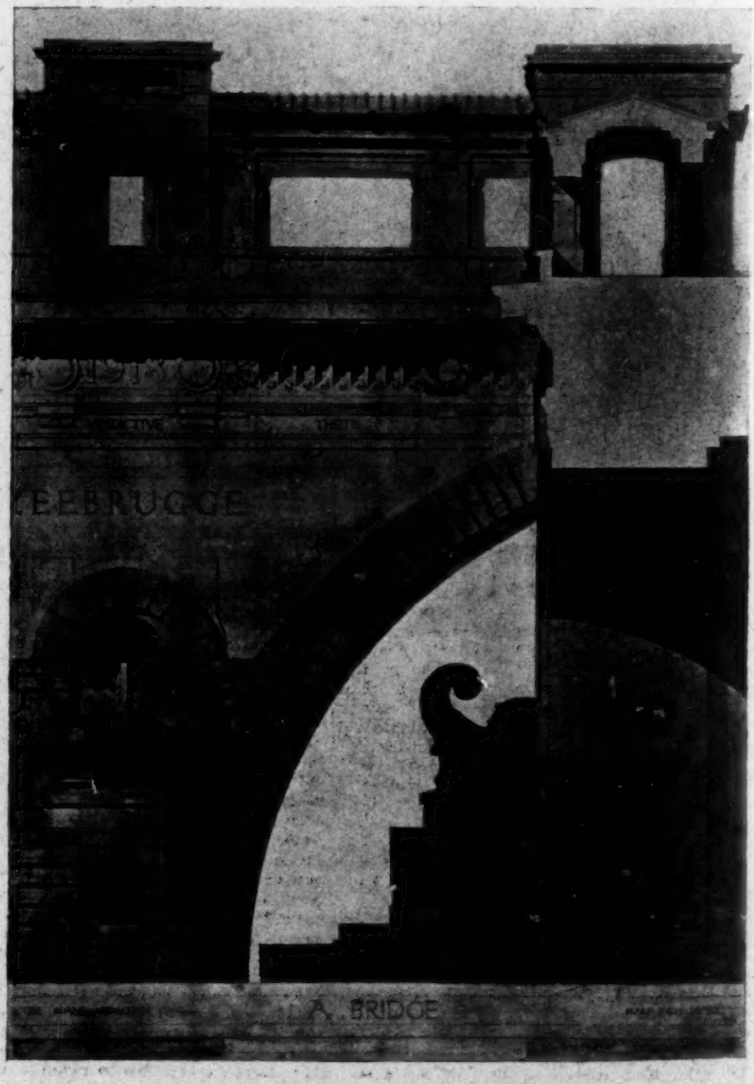
	PAGE
THE RESTRICTION OF RESTRICTIONS	183
NOTES	184
EXHIBITIONS OF THE WEEK	186
GENERAL NEWS	186
CORRESPONDENCE	187
R.I.B.A.	188
MEETINGS	191
THE PROPOSED NATIONAL BUILDING CODE	194
LAW REPORT	195
THE DEVELOPMENT OF LONDON	196
SURVEYORS' INSTITUTION	197
ECONOMICS IN PLANNING AND THE EMPLOYMENT OF NEW MATERIALS	197
HOUSING EXHIBITION AT OLYMPIA	198
HOUSING AND TOWN-PLANNING NOTES	200
NEW METHODS AND MATERIALS	201
ANCIENT COTTAGES AND MODERN REQUIREMENTS	201
THE BUILDING TRADE	202

ILLUSTRATIONS.

The Soane Medallion: Winning Design.

THE conditions of the Soane competition assumed a tidal river 800 ft. wide, and laid down that this was to be spanned by a bridge, of not more than five arches, having covered footways on either side of a roadway 50 ft. wide, and leading to an important public building, which would close the vista on the north side of the river at a distance of 1,000 ft. from the centre of the bridge. The idea of designing the bridge as a war memorial leading to an international Hall of Peace suggested itself to the author, Mr. A. G. Shoosmith. The south abutment represents the year 1914, and is flanked by tall pylons marking the entry into war; the period of war is symbolised by the bridge with its five arches leading through an arch of Victory on the north abutment (1919) to a Hall of Peace beyond.

In working out the scheme the author thought that, as the view along the bridge was confined by covered footways, an insufficient portion of the building at the end could be seen to furnish a satisfactory object to the long narrow vista. He, therefore, decided that the composition must be dominated by some important object on the bridge itself and at the north end. Flanking pylons were unsuitable by reason of their duality; consequently, the triumphal arch was adopted. This arch corresponds very nearly in its width and in its height from the roadway to the top of the lower attic story with the Arc de Triomphe de l'Etoile, in Paris; the archway is a few feet wider than in that example. The view along the bridge and through the arch is then completed by a fountain placed in front of the Hall of Peace, symbolising the Prosperity that flows from Peace. The distance between the bridge and the building was felt to be too short; to increase the feeling of space, therefore, the "place" was



R.I.B.A. Soane Medallion: Design for a Bridge.
Awarded to Mr. G. A. SHOOSMITH.

widened riverwards and the broad flights of steps were introduced to give a better view of the Peace buildings from the river.

The piers of the bridge bear the dates of the successive years and the names of the naval battles on them, and of the ships engaged. Thus the naval memorials and emblems of the sea face the water; the memorials to the land forces are on the roadway of the bridge. At the two ends of the bridge are figures respectively of War and Victory, and a group of Victorious Peace surmounts the triumphal arch. In the "place" on the north bank are decorative groups and columns of victory, and a figure of Peace crowns the dome of the international hall.

In his review and criticism of the drawings submitted for prizes, Mr. Arthur J. Davis, F.R.I.B.A., referring to this drawing, said:—"It is obvious that the most important feature in a bridge is its function as a roadway. The traffic problem is, therefore, an all-important one, and the planning conception both of the bridge itself and of its approaches must be such that it solves the traffic difficulty without congestion and in a direct and straightforward manner. The winning design emphasises many of these essential points. The roads on the more important side of the river converge naturally to the bridge entrances. There is ample space for vehicles to cross and re-cross, and the buildings which form the vista at the end of the bridge are well-designed for their purpose. Moreover, these buildings are skilfully grouped and their mass does not throw the bridge out of scale; also they are not designed as independent groups without relation to the bridge." He regretted, however, that Mr. Shoosmith, after having so carefully thought out his traffic problem, should have added a perfectly unnecessary feature which went far to destroy the essential qualities for which he seemed to have aimed. The Triumphal Arch, which at one end spanned the roadway, would make the bridge during hours when the congestion was greatest, a bottle-neck at the point where it was erected. Mr. Shoosmith had himself criticised this point, as he showed two sections through the bridge, one with the arch and the other without, and the effect of the latter was in every way preferable. It might be urged that similar arches were a feature of some of the best of the old bridges; but he thought it would generally be found that these structures were purely military in use, being erected for purposes of defence and, therefore, not required in a modern design. On the other hand, if a triumphal approach to the bridge were found to be essential, he thought the problem could be solved by pylons or features on either side of the entrances, as in the Pont Alexandre, Paris, and these need not in any way impede or obstruct the traffic; but, if such features were introduced, it was essential that they should be placed on both sides of the bridge. After the traffic problem, the next important consideration was the view of the bridge from the river and the side embankments. Apart from their natural beauty, most navigable rivers were useful thoroughfares, and with the development of the motor in connection with water-transport it was quite possible that they might become a means of relieving some of the congestion in the streets. The programme stated that the width of the river to be spanned was 800 ft. and these dimensions indicated an important water thoroughfare. All successful bridges were designed to be effective from the water-level and the side quays. The maximum number of arches given in the programme was five, but this should not have prevented the competitors from considering whether a bridge with a fewer number of openings would not have been a more practical and a more modern solution of this problem. Moreover, the aspect of the bridge from the river and from the quays appeared to disadvantage, owing to the unfortunate addition of the triumphal arch, as the two sides did not balance. The approaches from the bridge level to the quay side were a vital feature, but the two huge masses of steps leading from the upper to the lower quays were unnecessarily important, and, if introduced at all, should have discharged on to a quay at least four times the size shown. These steps were entirely out of scale with the remainder of the composition.

"Generally speaking," he said, "in designing bridges, buildings and retaining walls on a riverside, broad masses and horizontal lines should be maintained and should predominate to harmonise with the flowing, horizontal lines of the water. Chambers's design for Somerset House was an excellent example of a riverside building and illustrates this point admirably."

Design for a Water Tower.

This was the subject set for the award of the Grissell Gold Medal and Prize of £10 10s. by the Royal Institute of British Architects in its annual competitions for 1915, but, owing to the war, these competitions were cancelled until 1920, and the results have only recently been made known. Any medium could be selected by the competitors, and the successful author (Mr. Frank H. Heaven, A.R.I.B.A.) worked entirely in reinforced concrete, other competitors choosing reinforced concrete with brick facing, reinforced concrete structure with steel tank, and dressed stone.

The data upon which the winning design was based is that recommended by the Second Report of the Joint Committee on Reinforced Concrete, together with the following:—Capacity of tank required, 50,000 gallons; actual capacity, 51,000 gallons; diameter of tank, 33 ft.; depth of water-line, 10 ft.; weight of water, 10 lbs. per gallon; capacity of water, 6¼ gallons per cb. ft.; working stresses on concrete—In compression in beams, 600 lbs. per sq. in.; in compression in column, 600 lbs. per sq. in.; in shear in beams, 60 lbs. per sq. in.; working stresses in steel—In tension, 16,000 lbs. per sq. in.; in shear, 12,000 lbs. per sq. in.; in compression, 15 times the stress in surrounding concrete; coefficients of elasticity in compression—Steel, (Es.), 30,000,000 lbs. per sq. in.; concrete (Ec), 2,000,000 lbs. per sq. in.; ratio, $\frac{Es}{Ec}$, 15; wind pressure, 30 lbs. per sq. ft.; mixture of concrete, 1 part Portland cement, 2 parts washed sand, 4 parts broken aggregate to pass defined meshes for various positions.

The dome is 6 in. thick, and has a diameter of 33 ft., a rise of 5 ft. and a radius of 29 ft. 9 in. It has been designed to carry, besides its own weight and wind-pressure, an accidental load equal to 36 lbs. per sq. ft., plus 50 per cent. for shock. No reinforcement is required to resist a maximum total compression at base of 42,400 lbs. (or 1,425 lbs. per ft. of circumference), but to resist a maximum radial thrust or hoop compression of 3,500 lbs. on a plane 9 ft. 6 in. long by 20 in. wide, reinforcement consisting of four ½ in. diameter rods at 5 in. centres is provided. No reinforcement is required to resist bending longitudinally between the above radial reinforcement.

The external wall of the tank is 8 in. thick with variable reinforcement. The tank, which is circular, has a domed top with pierced parapet, panelled exterior, with moulded base and cornice, and a flat bottom. The parapet is 4 in. thick and reinforced with ⅜ in. diameter bars at 4 in. centres. The cornice has similar reinforcement. Piercing the centre of the tank is a shaft 7 ft. in diameter, giving direct access from the ground below to the outside of domed roof, &c. A gallery 2 ft. 6 in. wide runs round the centre shaft in the tank above the water line, for inspection purposes and working of water valves, &c., and is 2¾ in. thick reinforced with radial rods at 7 in. centres. Light and air are admitted to tank through small apertures in walls above the water level.

Supporting the tank is a series of circular beams; the ends of the internal and external circular beams are supported by cantilevers off the main piers; the ends of the central circular beam being supported by the piers themselves. Radial beams and cantilevers complete the structure together with the floor slabs.

The tank is carried upon eight main piers or shafts with a thin screen wall closing in the interior, and the tower thus obtained is divided up into five stories or floors, lighted by small windows in each bay. The piers are tied in at each story level by the circular beams supporting the floors. The screen wall to lower or ground floor is brought out to the face of the piers. The first floor forms a roof over the ground floor, and also serves as a balcony between the piers with a pierced parapet, similar to that surmounting the dome around the circumference.

The eight main piers are rectangular on plan, and designed not only to resist the total compressive stresses but also the tensile stress due to wind pressure, &c., and are calculated for 10 ft. lengths (height between floors).

The story floors between tank and ground are supported by two circular beams and a cantilever. The external screen walls of the tower are 4 in. thick, reinforced vertically with a maximum reinforcement of .2835 sq. in. in centre, and a minimum reinforcement of .075 sq. in. at sides, and horizontally with a maximum of .2835 sq. in. in centre and a minimum of .105 sq. in. at sides. The base screen wall is also 4 in. thick, with the same reinforcement vertically and horizontally as that of the vertical in the upper screen walls. The wall of internal shaft passing through the water tank is 6 in. thick and reinforced horizontally with .182 sq. in. per 12 in. of height and vertically with .243 sq. in. per 12 in. of width.

The grillage foundation, which is circular on plan, projects 6 ft. beyond base of piers, and is 4 ft. thick reinforced with British Standard beams as follows:—Top layer, five 18 in. by 7 in. at 8 in. centres; bottom layer, eleven 12 in. by 5 in. at 18 in. centres.

An iron spiral stair running up through the centre gives access to each floor, to outside of dome, and to gallery in tank.

We may add that Mr. Heaven is a Bronze Medallist in Construction, Board of Education Exams.; Silver Medallist in Construction, City and Guilds of London, and "Building" Prizeman at Surveyors' Institution Examinations, 1912.

MEETINGS.

FRIDAY, *February* 13.

London Society.—Rev. E. G. O'Donoghue on "The Story of Bethlehem Hospital." At Royal Society of Arts, John-street, W.C. 4.30 p.m.

MONDAY, *February* 16.

Royal Institute of British Architects.—Mr. Paul Waterhouse, M.A., F.S.A., on "Future of Architectural Education." At 9, Conduit-street, W. 1. 8 p.m.

Surveyors' Institution.—Capt. W. H. Tapp, M.C., on "Survey on the Western Front." At 12, Great George-street, S.W. 8 p.m.

MONDAY, *February* 16—*February* 18.

International Garden Cities' & Town-planning Association.—Conference at Olympia.

THURSDAY, *February* 19.

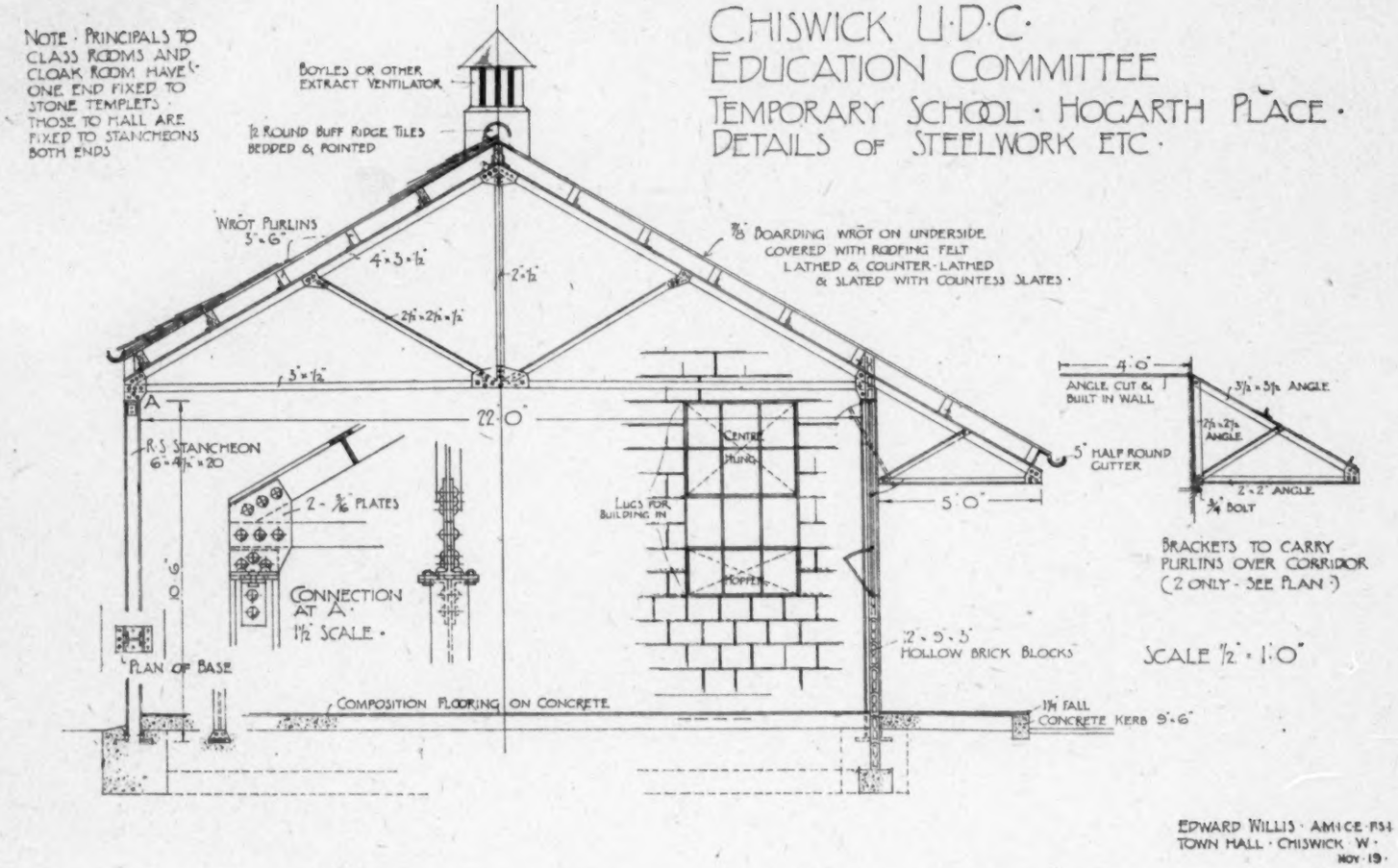
Auctioneers' and Estate Agents' Institute.—Mr. E. Woolf on "Problems at the Coming Quinquennial Valuation." At 34, Russell-square, W.C. 7 p.m.

L.C.C. Central School of Arts and Crafts.—Sir Banister Fletcher, F.R.I.B.A., on "Inigo Jones and His Works." At Southampton-row, W.C. 6 p.m.

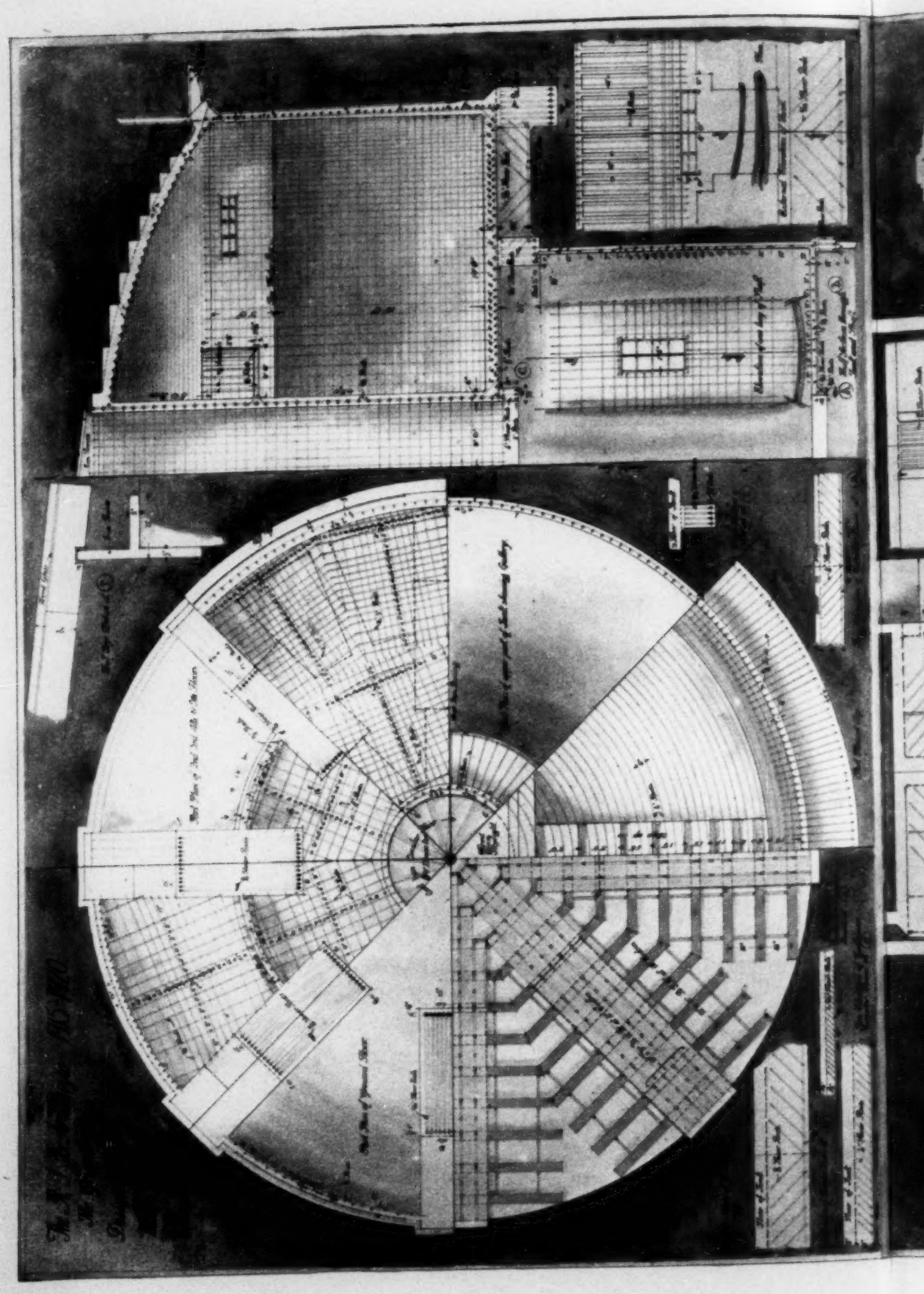
R.I.B.A. Roll of Honour.

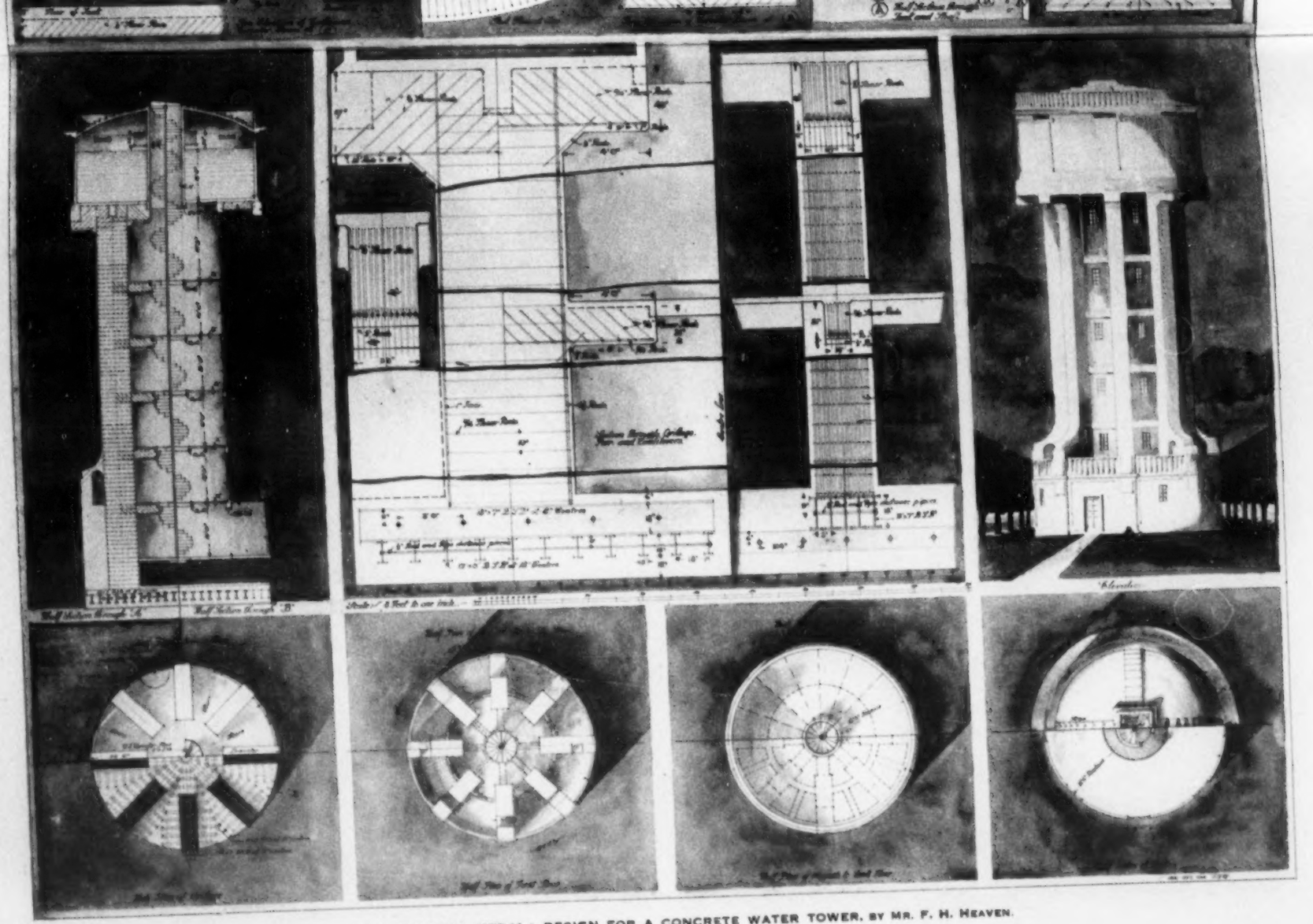
The *Journal* of the Royal Institute of British Architects announces the following list of its members who fell in the war, in addition to the lists already published:—

Barclay, F. (*L.*)
Bowes, R. (*S.*)
Chard, C. N. (*S.*)
Cruickshank, D. E. (*S.*)
Edwards, J. P. (*L.*)
Ellis, E. M. (*L.*)
Faucett, S. S. (*S.*)
Fernyhough, S., jun. (*S.*)
Jones, W. O. (*S.*)
Peckham, A. N. (*A.*)
Radcliffe, J. (*S.*)
Sagar, W. H. (*A.*)
Sutherland, G. A. (*S.*)
Wheatley, J. H. L. (*A.*)

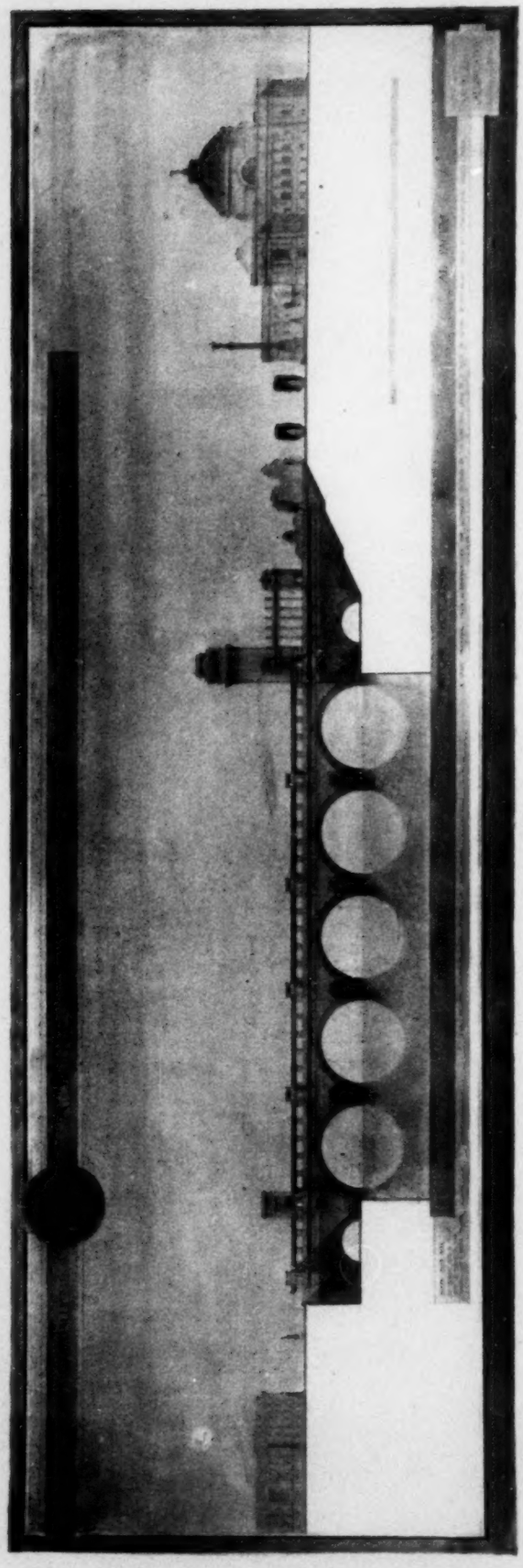

NOTE · PRINCIPALS TO CLASS ROOMS AND CLOAK ROOM HAVE ONE END FIXED TO STONE TEMPLETS · THOSE TO HALL ARE FIXED TO STANCHEONS BOTH ENDS
CHISWICK U·D·C·
EDUCATION COMMITTEE
TEMPORARY SCHOOL · HOGARTH PLACE ·
DETAILS OF STEELWORK ETC ·
BOYLES OR OTHER EXTRACT VENTILATOR
½ ROUND BUFF RIDGE TILES BEDDED & POINTED
WROT PURLINS 5"×6"
4"×3"×½"
2"×½"
2½"×2½"×½"
⅜" BOARDING WROT ON UNDERSIDE COVERED WITH ROOFING FELT LATHED & COUNTER-LATHED & SLATED WITH COUNTESS SLATES ·
3"×½"
A
22'·0"
R·S STANCHEON 6"×4½"×20
2 - ⅜" PLATES
CONNECTION AT A · 1½" SCALE ·
PLAN OF BASE
CENTRE PLUNG
LUGS FOR BUILDING IN
COPPER
9"·0"
9"·0"
9"·3" HOLLOW BRICK BLOCKS
COMPOSITION FLOORING ON CONCRETE
1¼" FALL CONCRETE KERB 9"·6"
5'·0"
4'·0"
ANGLE CUT & BUILT IN WALL
3½"×3½" ANGLE
2½"×2½" ANGLE
5" HALF ROUND GUTTER
2"×2" ANGLE
¾" BOLT
BRACKETS TO CARRY PURLINS OVER CORRIDOR (2 ONLY · SEE PLAN ·)
SCALE ½" = 1'·0"
EDWARD WILLIS · AMICE·FSI
TOWN HALL · CHISWICK · W ·
NOV·19·

[This semi-temporary school is being erected under the superintendence of Mr. E. Willis, Surveyor and School Architect to the Chiswick Urban District Council. The construction is of steel stanchions and Leicestershire 9 in. by 9 in. by 4 in. hollow brick blocks, and has been approved by the Ministry of Health.]

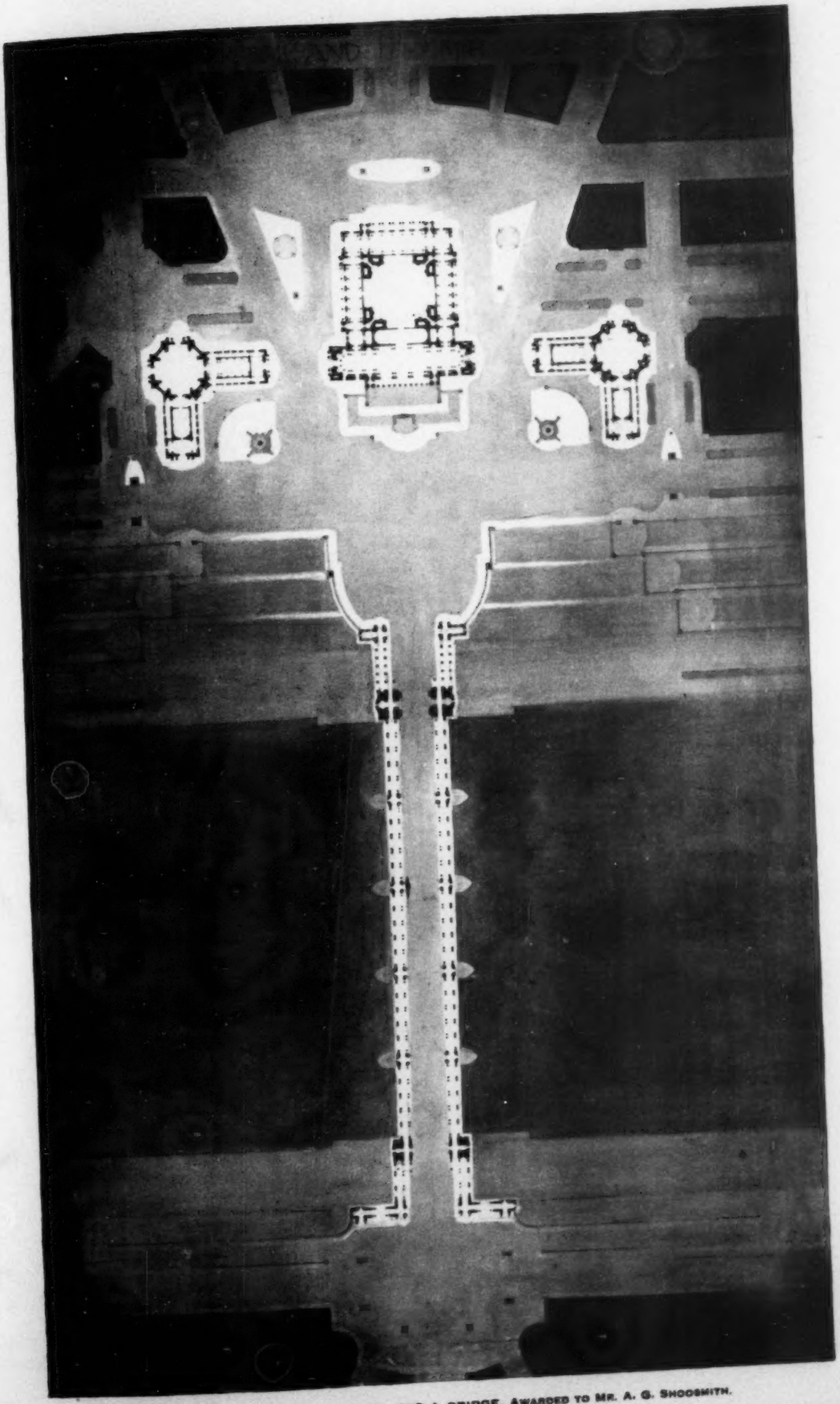




R.I.B.A. GRISSELL MEDAL: DESIGN FOR A CONCRETE WATER TOWER, BY MR. F. H. HEAVEN.



R.I.B.A. SOANE MEDALLION: DESIGN FOR A BRIDGE, AWARDED TO MR. A. G. SHOOSMITH.



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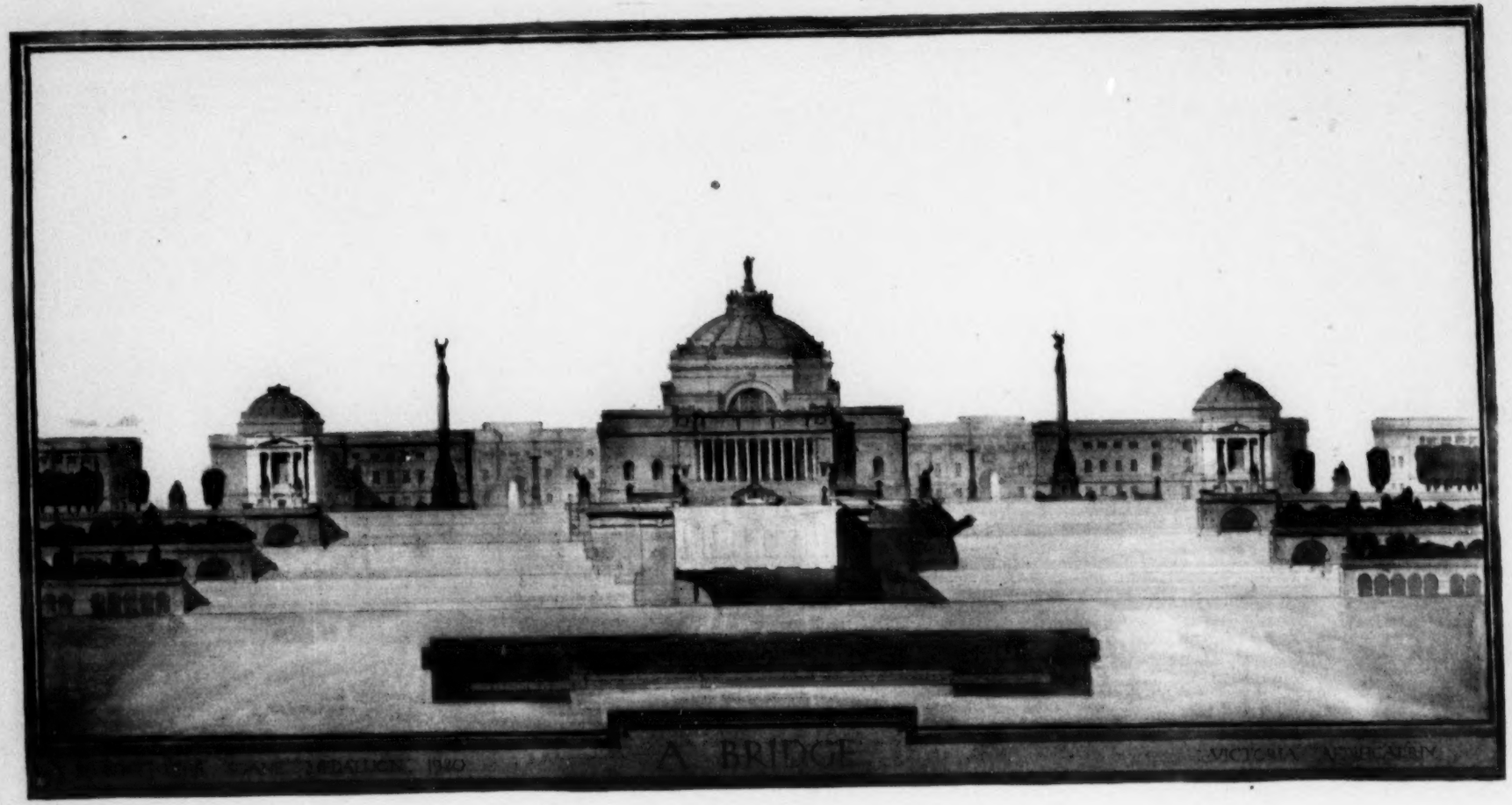
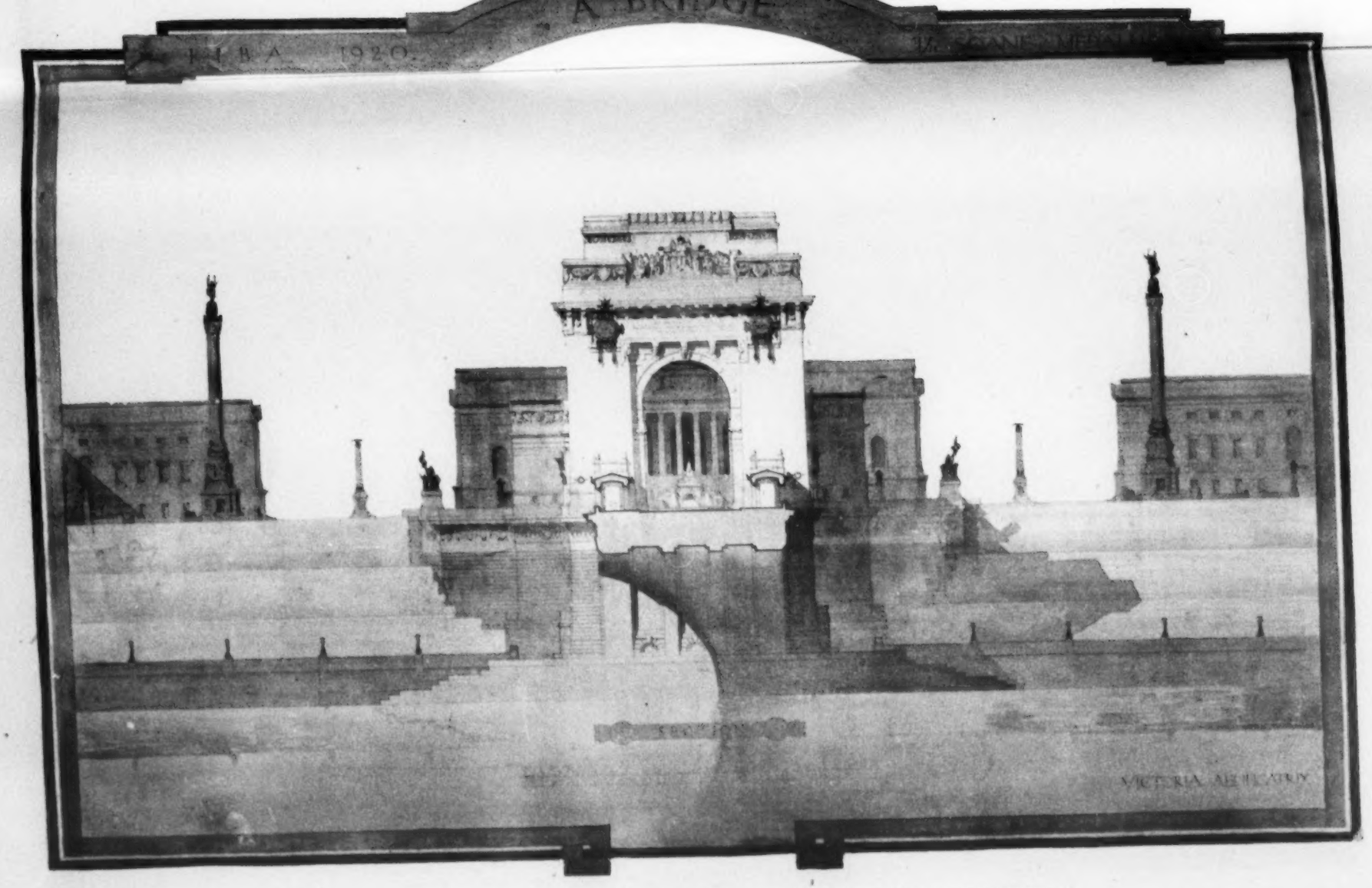
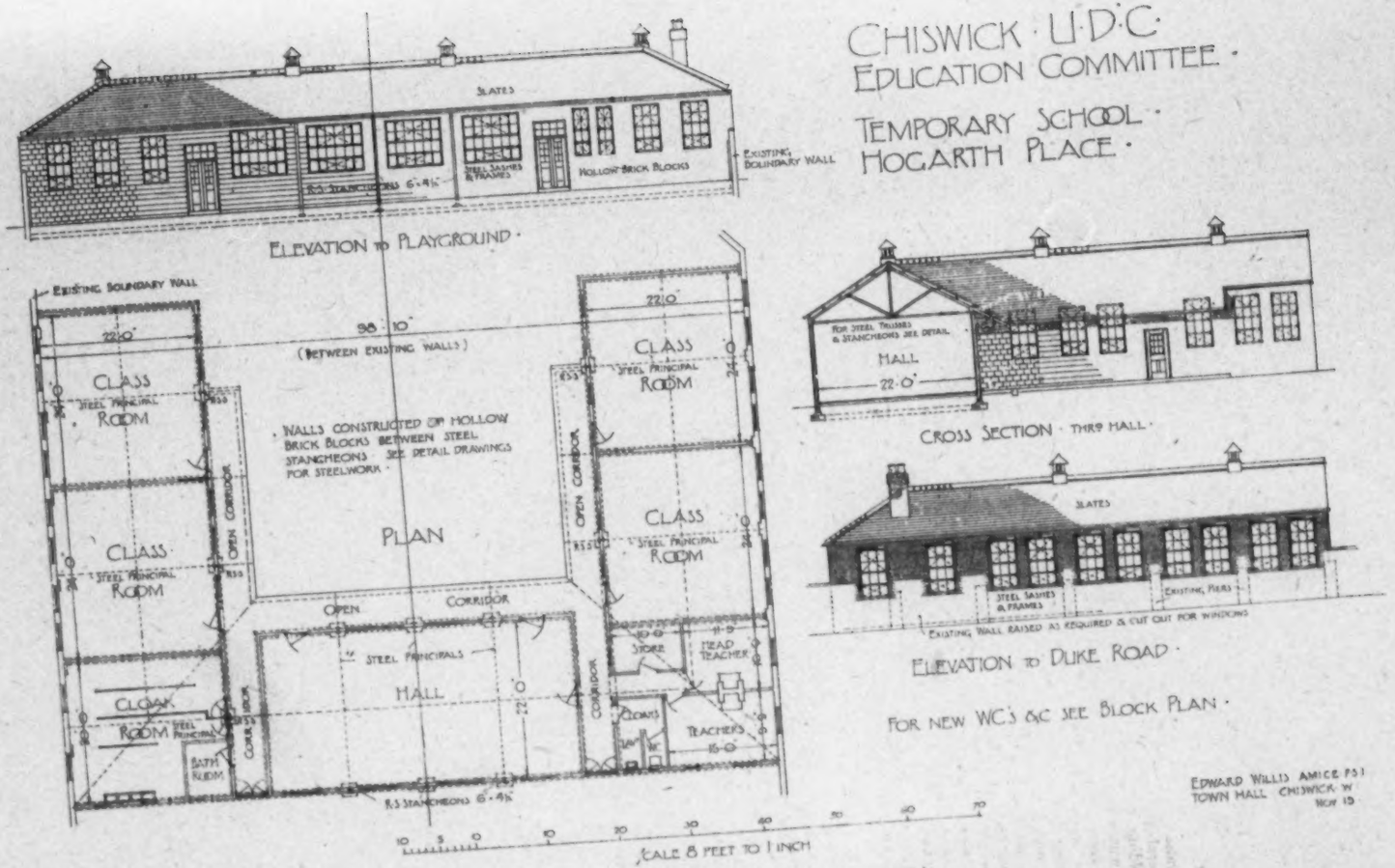

A BRIDGE

A BRIDGE
R.I.B.A. 1920



R.I.B.A. SOANE MEDALLION: DESIGN FOR A BRIDGE, AWARDED TO MR. A. G. SHOOSMITH.



Semi-temporary School. (*See previous page.*)

THE PROPOSED NATIONAL BUILDING CODE.

[In view of the great importance of this document just issued by the National Federation of Building Trades' Employers, we have arranged for a series of specially-contributed articles by a lawyer fully conversant with the existing and proposed forms of building contracts and with modern building practice, with a view to the careful analysis of the suggested amendments and the new terms introduced by it; but we wish to emphasise the fact that the views of our contributor are not necessarily our own.

The present article deals with the general scope of the proposals, and will be followed by others in which each clause will be subjected to careful consideration.]

ARTICLE I.

This eagerly-awaited document was made public at the General Meeting of the National Federation of Building Trades' Employers on January 28, and whatever criticisms may be in store for it they cannot deprive the Drafting Committee and its advisers of very warm satisfaction in having completed its labours and in having produced a document which must have a real value as an attempt to secure more equitable conditions to the building contractor, who has so long laboured under terms of contract which impose upon him more onerous conditions than those usually found in other commercial contracts.

The proposed Code is the result of the prolonged consideration by experienced builders of the pains and penalties to which practice has shown them to be exposed under earlier forms of contract; and while, at first sight, they appear to have over-loaded the document by use of a great deal of terminology, rendering it almost unwieldy in bulk, it must be borne in mind that experience has made the builder think that every deficiency of definition in the contracts into which he has entered, under the methods hitherto adopted for settling disputes, is likely to be interpreted to the disadvantage of the contractor.

Provided that those who read the Code in its present form consider it as merely an indication of the intentions of the Drafting Committee, amendment of phraseology and re-arrangement of clauses may reasonably be suspended until it has had that consideration and criticism to which it is entitled, but it is necessary to point out that, as it stands at present, there are many over-weighted and over-detailed clauses with frequent contradictions and ambiguities which may be expected to provide a prolific source of dispute unless rectified in the final drafting. If this rectification is not achieved, it will be a serious disappointment to the building trade, because it has, in the past, laboured under a disadvantage in having a form of contract which, for its interpretation, requires much legal aid and many appeals to the courts of law. We should, therefore, be failing in our duty of frank and open criticism if we neglected to point out that we have encountered much confusion of ideas in the Code as now drafted.

The full effect of this will only become apparent upon a detailed consideration of the proposed Code clause by clause, but we may opportunely refer to one of the more striking instances to illustrate our point. We find, for example, in the "Regulations to be observed in obtaining estimates for and entering into and carrying out contracts for building works in England and Wales" terms which would very much more properly be given place amongst the conditions governing the contract when let; while, on the other hand, these regulations, which purport by their title to be of a directory nature only in reference to matters to be done or rules to be observed prior to the actual signing of the agreement, are deliberately brought into the agreement itself, although at the time the latter is signed it may be within the knowledge of the parties that certain of these regulations relating to preliminary matters, incapable of being performed after the contract has been let, have not been complied with.

The standard by which the Code must be tested should have no relation to the measure of the power of the National Federation of Building Trades' Employers to enforce its terms upon the community, but should have regard only to the question whether, and the degree to which, its terms are equitable and reasonable; and we feel sure that this is the standard of criticism to which the Federation expects and hopes its new Code will be subjected.

It is, however, interesting to consider how far the form of building contract fell short of this test before there was proper combination of building contractors. At that period, building contracts were drafted in the interests of the employer, not only with the intention that the contractor should take all the unforeseen risks incidental to the contract but also upon the apparent assumption that the contractor was a shifty individual who would endeavour to evade his obligation in every possible direction, and who would not scruple to profit by any loophole left him to squeeze the employer for more cash than was represented by the contract sum. Contractors, as a class, resented this implied attitude of the employer and considered that the risks of unforeseen contingencies should be at least shared by the employer, and various attempts were made to secure more reasonable treatment in the shape of modified conditions. Such attempts were not altogether void of success, and eventually a form of contract (usually termed the R.I.B.A. form) was agreed between the Royal Institute of British Architects, the Institute of Builders and the National Federation of Building Trades' Employers of Great Britain and Ireland.

This form was revised from time to time and the last revision, made in 1909, contains far more equitable conditions than those sought to be applied in earlier days. It has been recommended by architects and used by individual employers very extensively, but in the case of nearly all the bigger building contracts, in which the employer was either a municipality or some other powerful corporation, the legal adviser of these corporations generally drafted conditions of contract with all or most of the objectionable characteristics referred to above. So onerous were the terms that the outcome was not infrequently the bankruptcy of the contractor concerned, and public opinion on such contracts was reflected in the decision of the Courts, which, while they steadfastly upheld the principle that an individual is bound in law by any conditions to which he clearly subscribes with his eyes open, almost invariably interpreted in favour of the contractor any onerous condition which was not absolutely clear in its intention and effect.

The war effected a change in this state of affairs; risks became so numerous and so heavy that not even the most speculative contractors would accept contracts under the old conditions, and the Government was compelled to agree to a type of contract known as the cost-plus-percentage form, under which, without taking any risks or responsibilities, a contractor secured a certain percentage of profit. That type of contract was in many ways unsatisfactory to employers; it served the need of the moment, but was not a form which could possibly recommend itself after the special conditions which produced it ceased to exist. Since the war no less than three new forms of building contract have been issued. The first and second are draft revisions of the forms published by the Royal Institute of British Architects and the Society of Architects respectively, and the third is the form of housing contract published by the Ministry of Health.

After the almost entire immunity from responsibility and financial loss experienced by the building contractor during the war it does not seem likely that he will return readily to the terms of the 1909 edition of the R.I.B.A. form of contract if he is able, through his organisation, to obtain better terms. For this reason it is perhaps to be regretted that in their revisions of contract, the Society of Architects and the Royal Institute of British Architects have failed to realise the circumstances which are at present prompting the building contractors to press for reconsideration of the terms under which they will enter into building contracts. Both these revised forms introduce new onerous conditions while relaxing none.

The Ministry of Health Housing Contract, however, is a big advance on any previous form, from the contractors' point of view and in the light of the large volume of important work now being carried out under it, must necessarily provide a precedent from which it is hardly likely that the builder will withdraw to his prejudice. This contract gives a complete security to the builder that any decision of the architect will, if he is dissatisfied with it, be reviewed by an independent arbitrator unfettered by any harsh clauses of the contract, and makes ample and full provision for the reimbursement of the contractor in respect of any additional cost of material and labour from that upon which he tendered. Moreover, by this contract many of the risks of construction are transferred from the contractor to the employer.

This, then, was the position relating to building contracts before the new Code was published, and while it is clear that the employer may refuse to continue to build under cost-plus-percentage contracts, it is equally clear that there is no intention on the part of the builders to carry out work under pre-war conditions of contract.

How far the proposed Code will become a code in fact, is a matter for conjecture only, as there can, without legislation, be no compulsion on either employer or contractor to use this form of contract exclusively. At the same time, the National Federation will, no doubt, obtain the sanction of its members to some form of disciplinary action against any member who fails to require the use of the Code in contracts entered into by members of the Federation, while if the Code is amended to meet the requirements of the R.I.B.A., it will probably be recommended for use to the employer by his architect.

The form and detailed conditions of this important document are so completely new that it cannot be considered in any sense a revision of the R.I.B.A. form or any other form. There is hardly a term or paragraph in the one similar to the corresponding term or paragraph in the other. It consists of 34 pages in all, of which four pages are "Regulations to be observed in obtaining estimates for and entering into and carrying out contracts for building works in England and Wales," 28 pages are General Conditions of Contract, and two pages are Articles of Agreement. A tender form, which accompanies the Code, is drafted to offer to carry out the works in accordance with the drawings and bills of quantities and the conditions provided in the National Building Code, on the understanding that the tender is subject to the regulations incorporated in the Code having been carried out and observed and subject to the Articles of Agreement being executed.

There are two special features about the Articles of Agreement. In the first place there is provision that, should any alteration of wages in all or any of the trades engaged take place, "the sum payable to the Contractor shall be proportionately increased or decreased as the case may be," but there is no provision, as in the Housing Contract of the Ministry of Health, that there shall be no increase or decrease of profit to the contractor by reason thereof. As it stands, the clause is by no means free from ambiguity, and as the subject matter dealt with goes to the whole root of the contract, a provision of this kind should be more carefully drafted. In the second place, the regulations are sought to be incorporated

into the agreement, while it is stated that should any clause in the bill of quantities or other documents relating to the works be found to be "in contravention of or in disagreement with the terms of this agreement and the regulations and conditions, the latter terms shall prevail."

This latter provision is of some importance, as will be realised when the terms of the regulations and the likelihood of failure of the architect to adhere to them in all respects are considered.

The Regulations prescribe in a most detailed manner the measures which every architect must take and the procedure which he must adopt in the preparation of the contract drawings and the details which such drawings must show, while they impliedly require the employment of a person other than the architect to prepare bills of quantities in accordance with the national standard method of measurement for all works "unless the total cost of the works will not exceed £1,000," while both bills of quantities and plans are to be warranted by the employer in regard to accuracy and sufficiency respectively. The method of preparing the contract documents prescribed by these regulations is, however, admittedly the most efficient and fair one. It is adopted by a great many of the members of the architectural profession and under it, as under no other, the contractor will be able, at the time he makes his tender, to make an accurate estimate. There are in the regulations new rules also as to the inspection of site, the opening and publication of tenders, the naming of the clerk of works before tenders are submitted, and as to the parties requiring security for completion of work on the one side, and payment for the same on the other.

The General Conditions of the contract appear to aim at the amendment of existing forms of contract by the establishment of four important principles:—

1. That any delay of work or happening in the execution of the work which is not clearly anticipated and accurately detailed by the architect in his plans and the quantity surveyor in his bills of quantities upon which the tender is made, must be deemed to have been omitted from the contractor's estimate and therefore subject to an extra payment.

In the R.I.B.A. form provision is made by Clause 12A for the correction of errors in the bill of quantities when the latter is included in the contract and, therefore, this principle has already been impliedly introduced in the existing forms of contract, but in the new Code there are various clauses inserted with the object of removing ambiguities and doubt in this matter.

The most important of these (in addition to the Regulations referred to above) are the following:—

(a) No item of work incidental to the carrying out of the contract is to be required of the contractor for his lump sum unless it is incorporated in the Bill of Quantities, including items ranging from Workmen's Compensation Insurance to the cleaning of floors and windows; while other items, sometimes sought to be included in the lump sum tender, must be shown in the Bill of Quantities as provisional items.

(b) So long as the works are carried out in accordance with the contract the contractor is to have no responsibility for defects or damages to property, and has complete protection against acts of God, Acts of Parliament, Government restrictions, *force majeure* and other unforeseen contingencies.

2. That the contractor's estimate must be deemed to be given on precise data as regards cost of labour and materials as well as upon the assumption that his work will not be subjected to delays of any kind.

This provision will practically remove the gambling element from the contractor's estimate, and should result in the reduction of the contingency percentage, and in a corresponding economy to the employer, provided the contingencies do not occur. On the other hand, some of the risks excluded are risks which until the war, all classes of commercial men as well as builders were expected and ready to take.

To put this principle into effect there are important provisions in the Code, amongst which are the following:—

(a) If any materials are unobtainable or only obtainable after delay, or at higher prices than those ruling at the date of the estimate, the contractor may offer a reasonable substitute.

(b) Increased cost of labour shall automatically involve a proportional increase in the lump sum cost.

(c) Any delay from reasons ranging from Acts of Parliament to shortage of local labour and delays in obtaining special material, shall not only result in an extension of time for completion, but any extra cost or expense to which the contractor is put thereby shall be added to the contract sum.

(d) Charges for variation of work, while based on the prices set out in the Bill of Quantities, shall include additional cost to the contractor, if any, by reason of the work not having been done under the same conditions as the contract work.

(e) If by reason of anything outside the contractor's control a delay occurs in the work lasting for more than three months, the contractor may cancel the contract and claim to be paid not only for loss directly sustained, but also for loss of profit on the uncompleted work.

3. That on the works the contractor is to be supreme as long as he carries out the contract requirements, and provisions of the Code seek to prevent any possible interference or obstruction of his work by architect, clerk of works, or outside contractors.

This principle is effected (*inter alia*) by:—

(a) Restricting the powers of the clerk of works to that of merely an examiner of work and material for the architect, and making provision for his removal on a reasonable complaint by the contractor that his conduct is harsh or unreasonable.

(b) Detailing the relationship between any sub-contractor and the contractor under which the contractor has complete control, and making provision that no sub-contractor shall be employed against whom the contractor shall make reasonable objection.

(c) Penalising the employer for any delay of the architect in supplying plans or instructions, or failing to inspect works when required.

4. That in every question of dispute whatever, there is to be a right of appeal to independent arbitration, should the contractor or employer dispute the decision of the architect.

In the new Code an entirely new form of arbitration court is set up, which consists, not of a single architect, but of two arbitrators, one appointed by the President of the Royal Institute of British Architects, and one by the President of the National Federation of Building Trades' Employers, each from a panel of arbitrators formed in various regional areas in the country. The manner of arbitration is to be subject to special rules, and is to be carried out in the manner provided by the Arbitration Act, 1889.

The above innovations are the most far-reaching of all the changes, and perhaps more clearly indicate the principles involved than any other clauses, though in addition there are striking provisions in regard to assignment of contract, payment on interim and final certificates, and opportunities to be given to the contractor to have the option of carrying out "ancillary works" to the subject matter of the contract.

Each provision will be carefully criticised in future articles.

Oulton Broad Sewerage Scheme.

The Oulton Broad Urban District Council has had to abandon consideration of a sewerage and sewage disposal scheme, designed by W. H. Radford & Son, of Nottingham, owing to the incorporation of the district by Lowestoft.

LAW REPORT.

Bonus Test Action.

THIS case, heard by Mr. Justice Roche in the King's Bench Division, was a test case as to a worker's right to retain war bonus on wages, brought by Mr. J. B. Hill, a member of the General Union of Carpenters and Joiners, against Henry Boot & Sons, Ltd., contractors, of Sheffield, for a declaration that plaintiff was entitled to be paid a bonus of 12½ per cent. on wages earned by him on time rates whilst in the defendants' employ, and from March 5, 1919.

Mr. Disturnal, K.C., for the plaintiff, said he was employed by the defendants, who had a Government contract at Chepstow Shipbuilding Yard, and who were members of the South Wales and Monmouthshire Building Trades' Employers' Association. In November, 1918, plaintiff was paid at the rate of 1s. 3d. per hour, plus travelling and subsistence allowances, with a bonus of 12½ per cent. made under the Munitions Act. In December, 1918, the two bodies to which the plaintiff and defendants belonged passed a resolution that the time rate of carpenters should be increased to 1s. 4d. per hour from January 7, 1919, and 1s. 6d. from February and onwards. Nothing was said in the resolution about the bonus. These rates of pay were received by the plaintiff for January and February, and he also received the bonus, but, on March 5, 1919, defendants posted a notice at the works stating that in the absence of a definite ruling as to whether the 12½ per cent. bonus should merge into or be paid additional to the advance in wages recently granted to operatives in the building trades, payment of the bonus would be suspended from March 5, pending a definite ruling on the point. The plaintiff was claiming for payment of the bonus from March 5 to June 1.

Mr. Schiller, for the defendants, submitted that no case had been made out. The matter was regulated by the Wages (Temporary Regulation) Act, 1918, and Section I (1) of that Act showed that employers and employed could fix new prescribed rates of wages by agreement, but the decision must be approved by the Minister of Labour, and in the present case the Minister had not approved it. The rate of wage had been settled in September, 1918, and the only way to alter it was to have a recommendation by the Conciliation Board endorsed by the Ministry. Everybody assumed that the Ministry would consent as a matter of course, but consent was not given and the increase never became valid.

Evidence having been given on behalf of the defence, Mr. Justice Roche, in a considered judgment, after stating the facts, said in his opinion the contention of the defendants must prevail. The ruling and decision contemplated by the notice were intended to be a ruling and decision either of the Ministry of Labour or of the Joint Council acting with the approval of the Ministry. No ruling or decision favourable to payment had been expressed and, in his opinion, none was to be implied. The Court to which appeal was then made could not give a ruling or decision in favour of the claim, unless a right to the bonus was derived either from a contract between the parties or from legal obligation upon the defendants to pay the bonus. It could not be contended that employment under the March notice constituted a contract in any event to pay the bonus. Having regard to his conclusion that the bonus was not part of a prescribed rate, it was unnecessary to decide the further contention of the defendants that by paying the advanced time rate they had paid wages to the plaintiff at a rate greater and not less than any prescribed rate existent when the Act came into force and, therefore, had not failed in compliance with the Act. That was a formidable contention for the plaintiff to meet, but it was not necessary for him to decide why it ought to prevail. He would merely indicate that the point was taken and was open if the matter should go to another Court. He gave judgment for the defendants; there would be no costs.

THE PROPOSED NATIONAL BUILDING CODE.

[In view of the great importance of this document just issued by the National Federation of Building Trades' Employers, we have arranged for a series of specially-contributed articles by a lawyer fully conversant with the existing and proposed forms of building contracts and with modern building practice, with a view to the careful analysis of the suggested amendments and the new terms introduced by it; but we wish to emphasise the fact that the views of our contributor are not necessarily our own.

The present article deals with the general scope of the proposals, and will be followed by others in which each clause will be subjected to careful consideration.]

ARTICLE I.

This eagerly-awaited document was made public at the General Meeting of the National Federation of Building Trades' Employers on January 28, and whatever criticisms may be in store for it they cannot deprive the Drafting Committee and its advisers of very warm satisfaction in having completed its labours and in having produced a document which must have a real value as an attempt to secure more equitable conditions to the building contractor, who has so long laboured under terms of contract which impose upon him more onerous conditions than those usually found in other commercial contracts.

The proposed Code is the result of the prolonged consideration by experienced builders of the pains and penalties to which practice has shown them to be exposed under earlier forms of contract; and while, at first sight, they appear to have over-loaded the document by use of a great deal of terminology, rendering it almost unwieldy in bulk, it must be borne in mind that experience has made the builder think that every deficiency of definition in the contracts into which he has entered, under the methods hitherto adopted for settling disputes, is likely to be interpreted to the disadvantage of the contractor.

Provided that those who read the Code in its present form consider it as merely an indication of the intentions of the Drafting Committee, amendment of phraseology and re-arrangement of clauses may reasonably be suspended until it has had that consideration and criticism to which it is entitled, but it is necessary to point out that, as it stands at present, there are many over-weighted and over-detailed clauses with frequent contradictions and ambiguities which may be expected to provide a prolific source of dispute unless rectified in the final drafting. If this rectification is not achieved, it will be a serious disappointment to the building trade, because it has, in the past, laboured under a disadvantage in having a form of contract which, for its interpretation, requires much legal aid and many appeals to the courts of law. We should, therefore, be failing in our duty of frank and open criticism if we neglected to point out that we have encountered much confusion of ideas in the Code as now drafted.

The full effect of this will only become apparent upon a detailed consideration of the proposed Code clause by clause, but we may opportunely refer to one of the more striking instances to illustrate our point. We find, for example, in the "Regulations to be observed in obtaining estimates for and entering into and carrying out contracts for building works in England and Wales" terms which would very much more properly be given place amongst the conditions governing the contract when let; while, on the other hand, these regulations, which purport by their title to be of a directory nature only in reference to matters to be done or rules to be observed prior to the actual signing of the agreement, are deliberately brought into the agreement itself, although at the time the latter is signed it may be within the knowledge of the parties that certain of these regulations relating to preliminary matters, incapable of being performed after the contract has been let, have not been complied with.

The standard by which the Code must be tested should have no relation to the measure of the power of the National Federation of Building Trades' Employers to enforce its terms upon the community, but should have regard only to the question whether, and the degree to which, its terms are equitable and reasonable; and we feel sure that this is the standard of criticism to which the Federation expects and hopes its new Code will be subjected.

It is, however, interesting to consider how far the form of building contract fell short of this test before there was proper combination of building contractors. At that period, building contracts were drafted in the interests of the employer, not only with the intention that the contractor should take all the unforeseen risks incidental to the contract but also upon the apparent assumption that the contractor was a shifty individual who would endeavour to evade his obligation in every possible direction, and who would not scruple to profit by any loophole left him to squeeze the employer for more cash than was represented by the contract sum. Contractors, as a class, resented this implied attitude of the employer and considered that the risks of unforeseen contingencies should be at least shared by the employer, and various attempts were made to secure more reasonable treatment in the shape of modified conditions. Such attempts were not altogether void of success, and eventually a form of contract (usually termed the R.I.B.A. form) was agreed between the Royal Institute of British Architects, the Institute of Builders and the National Federation of Building Trades' Employers of Great Britain and Ireland.

This form was revised from time to time and the last revision, made in 1909, contains far more equitable conditions than those sought to be applied in earlier days. It has been recommended by architects and used by individual employers very extensively, but in the case of nearly all the bigger building contracts, in which the employer was either a municipality or some other powerful corporation, the legal adviser of these corporations generally drafted conditions of contract with all or most of the objectionable characteristics referred to above. So onerous were the terms that the outcome was not infrequently the bankruptcy of the contractor concerned, and public opinion on such contracts was reflected in the decision of the Courts, which, while they steadfastly upheld the principle that an individual is bound in law by any conditions to which he clearly subscribes with his eyes open, almost invariably interpreted in favour of the contractor any onerous condition which was not absolutely clear in its intention and effect.

The war effected a change in this state of affairs; risks became so numerous and so heavy that not even the most speculative contractors would accept contracts under the old conditions, and the Government was compelled to agree to a type of contract known as the cost-plus-percentage form, under which, without taking any risks or responsibilities, a contractor secured a certain percentage of profit. That type of contract was in many ways unsatisfactory to employers; it served the need of the moment, but was not a form which could possibly recommend itself after the special conditions which produced it ceased to exist. Since the war no less than three new forms of building contract have been issued. The first and second are draft revisions of the forms published by the Royal Institute of British Architects and the Society of Architects respectively, and the third is the form of housing contract published by the Ministry of Health.

After the almost entire immunity from responsibility and financial loss experienced by the building contractor during the war it does not seem likely that he will return readily to the terms of the 1909 edition of the R.I.B.A. form of contract if he is able, through his organisation, to obtain better terms. For this reason it is perhaps to be regretted that in their revisions of contract, the Society of Architects and the Royal Institute of British Architects have failed to realise the circumstances which are at present prompting the building contractors to press for reconsideration of the terms under which they will enter into building contracts. Both these revised forms introduce new onerous conditions while relaxing none.

The Ministry of Health Housing Contract, however, is a big advance on any previous form, from the contractors' point of view and in the light of the large volume of important work now being carried out under it, must necessarily provide a precedent from which it is hardly likely that the builder will withdraw to his prejudice. This contract gives a complete security to the builder that any decision of the architect will, if he is dissatisfied with it, be reviewed by an independent arbitrator unfettered by any harsh clauses of the contract, and makes ample and full provision for the reimbursement of the contractor in respect of any additional cost of material and labour from that upon which he tendered. Moreover, by this contract many of the risks of construction are transferred from the contractor to the employer.

This, then, was the position relating to building contracts before the new Code was published, and while it is clear that the employer may refuse to continue to build under cost-plus-percentage contracts, it is equally clear that there is no intention on the part of the builders to carry out work under pre-war conditions of contract.

How far the proposed Code will become a code in fact, is a matter for conjecture only, as there can, without legislation, be no compulsion on either employer or contractor to use this form of contract exclusively. At the same time, the National Federation will, no doubt, obtain the sanction of its members to some form of disciplinary action against any member who fails to require the use of the Code in contracts entered into by members of the Federation, while if the Code is amended to meet the requirements of the R.I.B.A., it will probably be recommended for use to the employer by his architect.

The form and detailed conditions of this important document are so completely new that it cannot be considered in any sense a revision of the R.I.B.A. form or any other form. There is hardly a term or paragraph in the one similar to the corresponding term or paragraph in the other. It consists of 34 pages in all, of which four pages are "Regulations to be observed in obtaining estimates for and entering into and carrying out contracts for building works in England and Wales," 28 pages are General Conditions of Contract, and two pages are Articles of Agreement. A tender form, which accompanies the Code, is drafted to offer to carry out the works in accordance with the drawings and bills of quantities and the conditions provided in the National Building Code, on the understanding that the tender is subject to the regulations incorporated in the Code having been carried out and observed and subject to the Articles of Agreement being executed.

There are two special features about the Articles of Agreement. In the first place there is provision that, should any alteration of wages in all or any of the trades engaged take place, "the sum payable to the Contractor shall be proportionately increased or decreased as the case may be," but there is no provision, as in the Housing Contract of the Ministry of Health, that there shall be no increase or decrease of profit to the contractor by reason thereof. As it stands, the clause is by no means free from ambiguity, and as the subject matter dealt with goes to the whole root of the contract, a provision of this kind should be more carefully drafted. In the second place, the regulations are sought to be incorporated

into the agreement, while it is stated that should any clause in the bill of quantities or other documents relating to the works be found to be "in contravention of or in disagreement with the terms of this agreement and the regulations and conditions, the latter terms shall prevail."

This latter provision is of some importance, as will be realised when the terms of the regulations and the likelihood of failure of the architect to adhere to them in all respects are considered.

The Regulations prescribe in a most detailed manner the measures which every architect must take and the procedure which he must adopt in the preparation of the contract drawings and the details which such drawings must show, while they impliedly require the employment of a person other than the architect to prepare bills of quantities in accordance with the national standard method of measurement for all works "unless the total cost of the works will not exceed £1,000," while both bills of quantities and plans are to be warranted by the employer in regard to accuracy and sufficiency respectively. The method of preparing the contract documents prescribed by these regulations is, however, admittedly the most efficient and fair one. It is adopted by a great many of the members of the architectural profession and under it, as under no other, the contractor will be able, at the time he makes his tender, to make an accurate estimate. There are in the regulations new rules also as to the inspection of site, the opening and publication of tenders, the naming of the clerk of works before tenders are submitted, and as to the parties requiring security for completion of work on the one side, and payment for the same on the other.

The General Conditions of the contract appear to aim at the amendment of existing forms of contract by the establishment of four important principles:—

1. That any delay of work or happening in the execution of the work which is not clearly anticipated and accurately detailed by the architect in his plans and the quantity surveyor in his bills of quantities upon which the tender is made, must be deemed to have been omitted from the contractor's estimate and therefore subject to an extra payment.

In the R.I.B.A. form provision is made by Clause 12A for the correction of errors in the bill of quantities when the latter is included in the contract and, therefore, this principle has already been impliedly introduced in the existing forms of contract, but in the new Code there are various clauses inserted with the object of removing ambiguities and doubt in this matter.

The most important of these (in addition to the Regulations referred to above) are the following:—

(a) No item of work incidental to the carrying out of the contract is to be required of the contractor for his lump sum unless it is incorporated in the Bill of Quantities, including items ranging from Workmen's Compensation Insurance to the cleaning of floors and windows; while other items, sometimes sought to be included in the lump sum tender, must be shown in the Bill of Quantities as provisional items.

(b) So long as the works are carried out in accordance with the contract the contractor is to have no responsibility for defects or damages to property, and has complete protection against acts of God, Acts of Parliament, Government restrictions, *force majeure* and other unforeseen contingencies.

2. That the contractor's estimate must be deemed to be given on precise data as regards cost of labour and materials as well as upon the assumption that his work will not be subjected to delays of any kind.

This provision will practically remove the gambling element from the contractor's estimate, and should result in the reduction of the contingency percentage, and in a corresponding economy to the employer, provided the contingencies do not occur. On the other hand, some of the risks excluded are risks which until the war, all classes of commercial men as well as builders were expected and ready to take.

To put this principle into effect there are important provisions in the Code, amongst which are the following:—

(a) If any materials are unobtainable or only obtainable after delay, or at higher prices than those ruling at the date of the estimate, the contractor may offer a reasonable substitute.

(b) Increased cost of labour shall automatically involve a proportional increase in the lump sum cost.

(c) Any delay from reasons ranging from Acts of Parliament to shortage of local labour and delays in obtaining special material, shall not only result in an extension of time for completion, but any extra cost or expense to which the contractor is put thereby shall be added to the contract sum.

(d) Charges for variation of work, while based on the prices set out in the Bill of Quantities, shall include additional cost to the contractor, if any, by reason of the work not having been done under the same conditions as the contract work.

(e) If by reason of anything outside the contractor's control a delay occurs in the work lasting for more than three months, the contractor may cancel the contract and claim to be paid not only for loss directly sustained, but also for loss of profit on the uncompleted work.

3. That on the works the contractor is to be supreme as long as he carries out the contract requirements, and provisions of the Code seek to prevent any possible interference or obstruction of his work by architect, clerk of works, or outside contractors.

This principle is effected (*inter alia*) by:—

(a) Restricting the powers of the clerk of works to that of merely an examiner of work and material for the architect, and making provision for his removal on a reasonable complaint by the contractor that his conduct is harsh or unreasonable.

(b) Detailing the relationship between any sub-contractor and the contractor under which the contractor has complete control, and making provision that no sub-contractor shall be employed against whom the contractor shall make reasonable objection.

(c) Penalising the employer for any delay of the architect in supplying plans or instructions, or failing to inspect works when required.

4. That in every question of dispute whatever, there is to be a right of appeal to independent arbitration, should the contractor or employer dispute the decision of the architect.

In the new Code an entirely new form of arbitration court is set up, which consists, not of a single architect, but of two arbitrators, one appointed by the President of the Royal Institute of British Architects, and one by the President of the National Federation of Building Trades' Employers, each from a panel of arbitrators formed in various regional areas in the country. The manner of arbitration is to be subject to special rules, and is to be carried out in the manner provided by the Arbitration Act, 1889.

The above innovations are the most far-reaching of all the changes, and perhaps more clearly indicate the principles involved than any other clauses, though in addition there are striking provisions in regard to assignment of contract, payment on interim and final certificates, and opportunities to be given to the contractor to have the option of carrying out "ancillary works" to the subject matter of the contract.

Each provision will be carefully criticised in future articles.

Oulton Broad Sewerage Scheme.

The Oulton Broad Urban District Council has had to abandon consideration of a sewerage and sewage disposal scheme, designed by W. H. Radford & Son, of Nottingham, owing to the incorporation of the district by Lowestoft.

LAW REPORT.

Bonus Test Action.

THIS case, heard by Mr. Justice Roche in the King's Bench Division, was a test case as to a worker's right to retain war bonus on wages, brought by Mr. J. B. Hill, a member of the General Union of Carpenters and Joiners, against Henry Boot & Sons, Ltd., contractors, of Sheffield, for a declaration that plaintiff was entitled to be paid a bonus of 12½ per cent. on wages earned by him on time rates whilst in the defendants' employ, and from March 5, 1919.

Mr. Disturnal, K.C., for the plaintiff, said he was employed by the defendants, who had a Government contract at Chepstow Shipbuilding Yard, and who were members of the South Wales and Monmouthshire Building Trades' Employers' Association. In November, 1918, plaintiff was paid at the rate of 1s. 3d. per hour plus travelling and subsistence allowances, with a bonus of 12½ per cent. made under the Munitions Act. In December, 1918, the two bodies to which the plaintiff and defendants belonged passed a resolution that the time rate of carpenters should be increased to 1s. 4d. per hour from January 7, 1919, and 1s. 6d. from February and onwards. Nothing was said in the resolution about the bonus. These rates of pay were received by the plaintiff for January and February, and he also received the bonus, but, on March 5, 1919, defendants posted a notice at the works stating that in the absence of a definite ruling as to whether the 12½ per cent. bonus should merge into or be paid additional to the advance in wages recently granted to operatives in the building trades, payment of the bonus would be suspended from March 5, pending a definite ruling on the point. The plaintiff was claiming for payment of the bonus from March 5 to June 1.

Mr. Schiller, for the defendants, submitted that no case had been made out. The matter was regulated by the Wages (Temporary Regulation) Act, 1918, and Section I (1) of that Act showed that employers and employed could fix new prescribed rates of wages by agreement, but the decision must be approved by the Minister of Labour, and in the present case the Minister had not approved it. The rate of wage had been settled in September, 1918, and the only way to alter it was to have a recommendation by the Conciliation Board endorsed by the Ministry. Everybody assumed that the Ministry would consent as a matter of course, but consent was not given and the increase never became valid.

Evidence having been given on behalf of the defence, Mr. Justice Roche, in a considered judgment, after stating the facts, said in his opinion the contention of the defendants must prevail. The ruling and decision contemplated by the notice were intended to be a ruling and decision either of the Ministry of Labour or of the Joint Council acting with the approval of the Ministry. No ruling or decision favourable to payment had been expressed and, in his opinion, none was to be implied. The Court to which appeal was then made could not give a ruling or decision in favour of the claim, unless a right to the bonus was derived either from a contract between the parties or from legal obligation upon the defendants to pay the bonus. It could not be contended that employment under the March notice constituted a contract in any event to pay the bonus. Having regard to his conclusion that the bonus was not part of a prescribed rate, it was unnecessary to decide the further contention of the defendants that by paying the advanced time rate they had paid wages to the plaintiff at a rate greater and not less than any prescribed rate existent when the Act came into force and, therefore, had not failed in compliance with the Act. That was a formidable contention for the plaintiff to meet, but it was not necessary for him to decide why it ought to prevail. He would merely indicate that the point was taken and was open if the matter should go to another Court. He gave judgment for the defendants; there would be no costs.

THE DEVELOPMENT OF LONDON.

At a meeting of the Society of Architects last evening, Mr. G. A. T. MIDDLETON read a paper on "A Basic Scheme for the Development of London." After referring to various schemes promoted for improving central London, he said that something exceedingly comprehensive was demanded. It was not a mere matter of undue concentration of traffic at a few points. What was wrong was something infinitely greater: excessive congestion of the heart of London itself. Expansion of the heart was vital; and next to it, intimately connected with it, was the immediate necessity for better arterial means of communication between the heart and the great body of outer London, not in one direction only, but in all. All this his scheme either directly provided for in itself, or rendered possible and even inevitable: at great cost—fabulous cost—certainly, but also at fabulous profit, which would justify the cost.

The engineer who laid out the South Eastern Railway recognised that the nearest route from the City to the West End of London lay along a chord which cut off the bend which the river took, and he set out his loop line from Cannon-street and Charing Cross accordingly, crossing the river twice. With efflux of time and the coming of the Underground, this loop had largely lost its value as a railway. But if it were converted into a roadway it would be invaluable. It would be worth the outlay over its purchase and conversion, even if there were no return, if it did no more than provide an alternative east and west traffic route to those already existing along Holborn, Fleet-street and the Embankment. By means of easily contrived slope-ways on either side, it would open up the whole of the land between the road and the river. The heart of London would there find the means of expansion for which it was now panting. The sloped ways southwards would also allow the road to be used by much of the through north and south traffic, which the existing bridges and their approaches were inadequate to carry.

There was another railway bridge over the Thames at Blackfriars belonging to the S.E. & C. Railway which was approached upon arches at a higher level still, and was connected by curves very rarely used and the loop line. The main double track across this bridge was used mostly for through goods traffic, and was of great importance, but it would not be impossible to utilise the curves and to convert the rest of the bridge into another roadway connected with the first, carrying it right through Blackfriars Station and opening into a circus in front of the Central Criminal Court. There would also be a sloped approach from the bottom of Queen Victoria-street, where St. Paul's Station now stood.

In this way three new bridges for vehicular and foot traffic would be provided across the Thames, each of them wider than any of the existing bridges, without obstructing the river more than at present and at little, if any, structural cost, except for embellishment. South London would be fully opened up, and ample means of local and through communication established.

In order to recoup the expenditure, he suggested in 1910 that not only would the valuable sites released by pulling down Charing Cross, St. Paul's, Blackfriars, Holborn and Cannon-street stations become available for sale or lease, but that there would be ample room upon the bridges for shops upon one side or both sides of the roadway. He also advocated the purchase of small property on each side of the new high level road, and the creation of parallel low-level roads, with shops rising therefrom with both low and high level frontages, and with storage accommodation in the existing arches under the road. Altogether, with the additional approaches shown on the accompanying plan, and with the continuation of Stamford-street as a direct through way to London Bridge, approximately seventeen or twenty miles of new frontages would be created. Once the district was opened up it would pay to replace and to rebuild, with discrimination, the whole disreputable triangle between the Thames, Waterloo-road and the Borough High-road. More housing would be provided under infinitely better conditions, more offices, more shops, more theatres and more public buildings; and the monetary benefit would be beyond all computation.

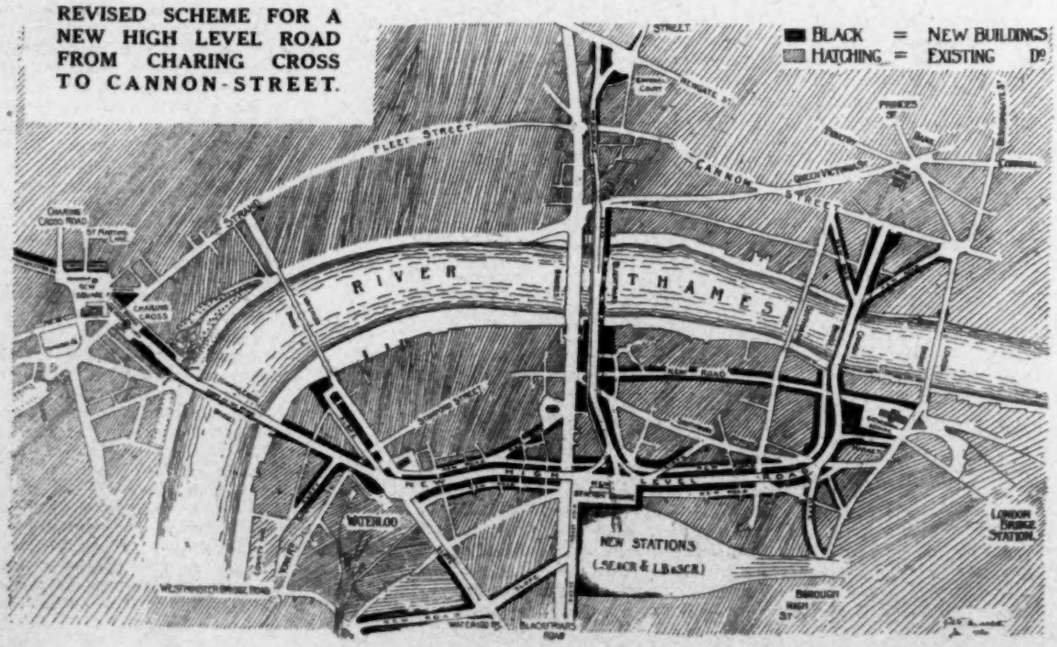
The Railways.—He proposed that the stations at Charing Cross, St. Paul's, Blackfriars, Holborn and Cannon-street be replaced by a great central terminus where the new high level road was met by its northern branch in Blackfriars-road. The main approach should be from the east, by switching both the South-Eastern and the Brighton Companies' metals off to the south of Guy's Hospital, utilising the present London Bridge Stations for local traffic only. The congestion in the Strand could be most easily removed by building a bridge across it. Its advantages were obvious, while the very similar levels of the railway and of the roads to the north of St. Martin's Church admitted of its construction with little gradient. He proposed to abolish comparatively little property in this district, though he would remove the block of buildings to the north of St. Martin's to form a square. Traffic from the west by way of the Processional Way would follow the present route, reaching the new bridge up a gentle slope from the Strand, the space between this slope and the Strand Bridge being occupied by a Tube station, above which Pugin's Charing Cross could be re-erected. The present Charing Cross Bridge only needed casing with masonry to be converted from a monstrosity into an object of great beauty, provided that it be done with skill. The obviously satisfactory way of doing this was to build shops upon the bridge, carrying them to at least the height of the girders.

The New Termini.—The new termini of the S.E. & C. and the L.B. & S.C. railways was open to many different treatments. He suggested a large high-level square as its main frontage, with another high-level frontage parallel with Blackfriars-road, to which it would be continued downwards by a sloped way; while a branch sloped way would cross the same road down to Waterloo-road, opposite a new road cut through slum property to Westminster Bridge-road—with the object of securing a direct approach from the west over Westminster Bridge.

London Bridge.—At the south end of Cannon Bridge, where it was not far from London Bridge, the problem was largely one of levels. Some unsightly railway bridges would be removed, and the opportunity should be taken to form an open space around Southwark Cathedral, and materially to improve the Vegetable Market, while at the same time providing two sloped ways for traffic from the high level road. Direct east and west communication at the low level should be opened up, past the Cathedral, with the suggested extension eastwards of Stamford-street.

Cannon-street.—At the north end of Cannon Bridge the main central approach should be supplemented by others from the north-east and

REVISED SCHEME FOR A NEW HIGH LEVEL ROAD FROM CHARING CROSS TO CANNON-STREET.



north-west. The former would almost wholly relieve the present congestion over London Bridge, while the latter would pick up so much of that now passing along Aldersgate-street as would not preferably go by Giltspur-street to the projected high-level Blackfriars Bridge. In this way, St. Paul's Bridge would be rendered unnecessary. The direct approach from the north ended abruptly in Cannon-street Station Yard, while only a little distance further north was the Bank crossing, crying aloud for relief. It might become necessary to pull down the Mansion House and cut a clear way through. A new site for an enlarged Mansion House could be found where Cannon-street Hotel stands. Cannon Bridge, like the others, would have houses or shops on it.

Blackfriars and Holborn.—The direct northern approach to the new terminus over the present railway bridge at Blackfriars would collect southward and disseminate northward traffic by way of Gray's Inn-road and Holborn, and by Giltspur-street—possibly widened and re-planned.

The Means of Accomplishment.—In considering the method for accomplishment, there were four alternatives:—(1) Direct Government action; (2) action by the authorities, under the Town-planning Act; (3) action by the railway companies concerned; (4) the formation of a special limited liability company for the purpose, in which the public and private authorities concerned would be large shareholders.

Sooner or later the work must be done. If done now, it could be done as a whole and economically. If deferred it would be done little by little, with many mistakes and constant adjustments and infinitely greater cost and much more worry. The economical way was to do it once and do it well.

SURVEYORS' INSTITUTION.

THE following candidates have passed the recent professional examination of the Surveyors' Institution:—

Adams, A. C., Derby
Allen, B. S., Slough
Arnott, W. G., Woodbridge
Bacon, S. G., Birkenhead
Ball, E. B., Slough
Bingham, C. H., London, N.
Broad, G. H., Retford
Casserley, H. F., Croydon
Chambers, H. F., Westminster
Cooper, A. B., Bishop Auckland
Cowell, A. E., Ryde
David, H. E., Llandaff
Dean, H. W., Cambridge
Dignasse, D. R., Streatham
Dolamore, C. W. G., Bournemouth
Forward, M. H., Scarborough
Gard, E. J., Williton
Hall, P., Brandon
Harris, J. C., Easton
Hayne, G. F., St. Audries
Heal, C. H., Totnes
Henshaw, R. R., Liverpool
Hocombe, M. J., London, W.
Jolliffe, H. W., Cowes
Keslake, L. J., Budleigh Salterton
Lilley, J. L., Westcliff-on-Sea
Lyons, R. S., Bedford
Mann, J. R. B., London, N.W.
Matts, J. S., Bletchingly
Middleton, C. B., Stamford Hill
Mist, W. T., Canterbury
Peck, F. E., Hatch End
Pemberton, E. G., Dublin
Pocock, D. A., Marlborough
Pollard, W. B., New Malden
Prall, H. H., Rochester
Rees, C. C., Sidmouth
Reynolds, F. A., Henley
Richardson, F. S., Chiswick
Sanders, S., London, E.
Searles, C. F., Maidstone
Shipley, W. A., Bedford
Sims, B. W., Neath
Smith, L., Camberwell
Smith, M. G., Newick
Spiller, E. W., Hampstead
Thornborrow, T. J., Penrith
West, E. W. A., Brighton
White, R. L., Southend-on-Sea
White, W. H., Regent's Park
Wilson, W. B., Derby
Winterton, R. K., Tunbridge Wells
Wright, E. W., Lee
Young, R. W. C., Langford
Young, W. B., Chelmsford.

ECONOMIES IN PLANNING AND THE EMPLOYMENT OF NEW MATERIALS.

IN the course of a lecture at the R.I.B.A. Housing Conference last week, Mr. W. A. Harvey, F.R.I.B.A., said that it was most important that the views on the national housing emergency should be modified by calm and trained deliberations of men with no political axes to grind or fads to propagate. The key to the problem was standardisation; that alone would enable us to erect the necessary number of houses at a minimum of cost. Such cottages would depend for whatever attractions they possessed, not so much upon their craftsmanship as upon their adequately meeting the wants of the occupiers and the excellence of their design. By this means great economy would be effected, and we should be spared the village where each dwelling bore witness to the foibles or idiosyncracies of its owner or architect; instead, we should get a pleasing and thoughtfully composed collection of groups of similar units, each of which contributed to a composite whole. The whole would be restful, attractive and adequate for the tenants and agreeable to the eyes of visitors, because each group would be so manifestly an integral part of a scheme which had been viewed in its entirety at its inception.

Standardisation.—There was a great divergence of opinion as to the merits of standardisation, but standardised beauty was advocated, not standardised ugliness. An article repeated from pattern need not necessarily be tawdry or commonplace. We had to go back to the Georgian period, say, for an inspiration, for there we found tastefulness and comeliness. Doors might be standardised, but, if the model was good, repetition would give pleasure. The important thing was that since we had to plan, design and build against time, as well as against grave financial and other handicaps, we must accept the principle of standardisation if we would make a practical contribution to the solution of the housing problem. To oppose it and to continue to dream of infinite variety was to stand convicted of being idealists while an impatient nation would take the work from the hands of the architects and build rapidly—not well, but economically.

The idea that because a house was erected at the lowest possible cost it was, therefore, economical, was entirely misleading. The true test of economy in house building was the lasting qualities of the building. The probable cost of repairs and upkeep during the ten years following construction must be included in the accounts, and also the value of the property at the end of that time. By standardisation was meant standardisation of high quality, and that was the way to secure the best houses at the best terms. The Government must be persuaded that simply to take the lowest cost of the "jerry-built" house as a standard would only be a temporary solution of the problem, and would land the country into financial problems of graver and greater magnitude. The peril was that in the anxiety to build, and to build cheaply, unwise suggestions might be accepted. There was danger that the claims for rival methods might not receive the close and expert investigation on the essential lines of experiment and practical tests they merited. Groups of experimental homes should be erected by the Government.

Economy in Design.—The greatest economy must be effected in the design of the houses. For instance, roofs must be simple, with no unnecessary complications; chimneys should be grouped together; generally, the eaves should run uninterruptedly; windows should not be allowed to complicate the spouting and roofing by breaking through the roof. Compactness and regularity should always be aimed at; the wall lines should be set at right angles and should be as long and unbroken as possible. Windows, doors, skirtings, cupboards, stairs, &c., might all be standardised, without sacrificing the smallest amenities in the new houses. All planning should be adapted to avoid waste in building materials. Joists were stocked in various stock lengths. Rooms of 12 ft. 3 in. width, with four 4½ in. bearings allowed at each end, would require joists of 13 ft. lengths, in which case there was no waste; but, on the other hand, rooms 12 ft. 6 in. wide with the same bearings, would require 14 ft. lengths, and so to gain a mere 3 in. in the room, 12 in. were wasted on each joist.

The broad-fronted type of house would be most favoured in future schemes; and the advantages of this type lay in its superior lighting and ventilation. The greater width allowed of considerable latitude in the choice of internal planning, with facilities for more conveniently arranged rooms and special regard to the right aspect. It was possible for the living-room and one bedroom to be through rooms with windows at each end, and such rooms were bright, cheerful and suitable for any aspect. The relative position of windows and doors required very careful consideration, as the arrangement and shape might add considerably to their usefulness. Opening doors and passages should be kept away from the fireplaces and windows; the comfort of the living-room depended on having as few doors as possible, and the doors should be kept to one wall and to one corner.

Bath Rooms.—The bath-room should be on the first floor, the supply of hot water being provided from a boiler at the back of the fireplace. Some time ago the lecturer had fixed a simplified system having a 12-gallon circulating boiler at the back of the fireplace, and a 12-gallon cold water tank. In that arrangement the bath, sink and lavatory were supplied by ¾ in. branch pipes connected to the exhaust pipe. The 40 and 30-gallon hot-water cisterns were omitted, together with the circulation pipes. The advantages were three-fold: simplicity, convenience and economy. Such a general system resulted in a saving of from £10 to £15 per house, and from the boiler it would be possible to take a flow and return pipe to a drying closet in the recess adjoining the kitchen fire.

Kitchen Ranges.—The ideal kitchen range had not yet been found, but there were good grounds for believing that a grate would be forthcoming shortly which would effectually supersede the obsolete range and satisfy the varying requirements of both the north and south of the country.

Concrete Construction.—With regard to methods of construction, concrete had made the most progress during recent years. Both reinforced slabs and hollow blocks had been satisfactory as to the structure and comfort of the houses, but the cost, even where aggregate had been readily available, was not appreciably less than bricks. Concrete could not be ruled out any more than other methods could be ruled out, for the enormous shortage of houses would necessitate the use of many useful materials. Experience had proved that solid-block hollow-wall construction was the most satisfactory form of concrete construction. In the case of hollow blocks it was possible to construct them in two layers of concrete of different aggregate, the outside impervious, and the inside of coke-breeze. If this precaution was not taken, the inside surface was unable to absorb the moisture condensed from the atmosphere and the result was disastrous. The construction of steel-frame and concrete houses was very simple, and the method deserved special attention.

Wood and Pisé-de-Terre.—Concerning wooden houses, these would not be suitable for urban areas, and the cost of maintenance would be considerable. There seemed to be a great future for *pisé-de-terre* in rural areas, and its stability had been proved beyond doubt. In the hands of sympathetic men with an affectionate regard for the amenities of the picturesque old English villages, *pisé-de-terre* might be used to improve upon work of other days. Standardisation was the only solution of the problem, but it must be a high standard.

HOUSING EXHIBITION AT OLYMPIA.

THE "Ideal Home" Exhibition, to which we briefly referred in our last issue, was opened on Wednesday last week, and will remain open until February 25. Among the exhibits are to be seen many new devices for saving labour in household work and many improvements on old methods; some very effective furniture and decorations are also shown, and by a judicious selection one could obtain, if not an "ideal" home, at any rate a very comfortable and convenient place in which to live.

The Ministry of Health has a very large exhibit, comprising blocks of cottages, built breast high, from the winning designs in the recent architects' competitions for working-class dwellings in the Northern Industrial Area (Mr. H. L. Massey, architect), the Midland Industrial Area (Messrs. Evelyn Simmons, Lic. R.I.B.A., and Leslie Glencross, A.R.I.B.A.), and the Southern and Midland Rural Areas (Mr. A. C. Martin, F.R.I.B.A.), and other cottages built to plans sanctioned by the Ministry. The first of these blocks are coated on the exterior with "Coatostone." Around the walls is a screen, showing these cottages as they would appear when erected. The Ministry is also showing a Norwegian type of wooden house, which was sent over in sections and erected complete in 36 hours. Three rooms built approximately to the plans of the winning design in the Labour-saving House Competition have been erected, and a model of the complete house is on view.

NEW METHODS AND CONSTRUCTION.

The ideality of the house exhibition will probably seem rather beyond the reach of the bulk of visitors, and we can imagine the searcher after cheap and simple delights will experience some real disappointment. We wonder when someone will have the courage to show what can be done by very simple means in a really inexpensive way, in which nice proportions and pleasing tone and colour are the chief values. As it is we are left a little between two extremes, the practical and ugly on one hand, and the impossibly expensive attractions; cottages which depend on several good coats of paint for their finished appearance cannot possess a sound attraction, and even when concrete blocks are moulded to look like roughly chiselled stone they leave one's heart untouched. Roof coverings are also somewhat of a difficulty still; but the cottages nos. 66, 71 (Boulton & Paul) and 72 are certainly amongst the most agreeable exterior effects.

The cottage with grey concrete brick walls (59) would have been very effective with plenty of white or even blue as a relief, but the colour adopted does not improve the bricks. The yellow-toned walls and red pantile roofs of Messrs. Dorman, Long & Co.'s steel framed building are shown to advantage in no. 57, and built in nice proportion with white painted woodwork would be very satisfactory. The system of construction is clearly shown in the exhibit.

The Norwegian House Building Co. exhibit a wooden house with red-tiled roof, which is also a pleasing result. In this case the exterior wall boarding is vertical and the interior wall surface is shown of wood, but might be covered with asbestos sheets.

Messrs. W. G. Tarrant & Sons show a well-treated cottage exterior (No. 19).

A picturesque structure shown by the Compressed Green Wood Construction Co. illustrates the employment of green timber which is wedged up in the building as it shrinks. The object of this company is to use the large stock of elm in this country, which, they say, is enough to build all the cottages we need. The wood is used in its green state and it is maintained that this is perfectly practicable and even advantageous in the method employed. It certainly appears to come into the market at present with many advantages over deal and it claims very careful consideration. The timber with which this building was erected was growing three weeks ago.

One of the things which would specially commend a wooden house of this kind to the architect would be that the material used in its natural state is so completely satisfactory for exterior or interior walls or for floors and ceilings, all applied decoration being therefore unnecessary. Nothing would be more pleasing for cottages than elm-boarded walls with thatched roofs and we do not see why damp and fire could not be effectually guarded against.

We do not forget that elm is a treacherous wood which shrinks and breaks and warps to an uncomfortable degree. We have known a good-sized beam breaking across the middle when the ends were so tightly fixed that the shrinkage in the direction of the grain forced the break. Wych-elm would, we suppose, be all right.

One of the best exterior effects is the exhibit of Bell's United Asbestos Co. The walls are built with "Poilite" panels framed in brown-stained timber of good width, and the roofs are covered with warm grey pantiles. The artizan cottage (No. 43) would have been better without its barge boards; there is a great deal of painting to be done, but if nicely proportioned and simplified it would be a pleasing cottage. This is by A. Thomas & Sons of Wrexham. The cottage is built of timber framing with weather boarding outside and asbestos sheets for walls and ceilings.

The most pleasing building from an architectural point of view is the "All Electric" House shown by the General Electric Co. This was built with walls painted to represent red bricks and has dull red tiled roof with tile hips. The proportion and grouping of the whole exhibit is one of the best of its kind we have seen. The architect is Mr. Albert J. Thomas. The builders are Messrs. Humphries, the roofing tiles by Geo. Tucker & Co., and Roberts, Adlard & Co. Beautiful fabrics of furnishing are shown by Story & Co., Derry & Toms, Treloar, Hampton's, Harrods, and John Barker & Co. If ever an imitation is justified one might say it would be in the Tilo-leum shown by Liberty & Co., which gives a floor very pleasing in appearance, but more comfortable for use than tiles.

Hampton's pretty pavilion with its trellised lounge and its daintily-furnished rooms will attract much attention.

Messrs. Higgs & Hill have a fine display of furniture, excellent in design and produced in first-rate quality.

Messrs Waring & Gillow and Messrs. Heal & Sons have charming exhibits with good form and refined and stimulating colour.

EXHIBITION OF DRAWINGS.

The partly-built full-size models of standard houses exhibited by the Ministry of Health with the large scenic pictures of them on the surrounding walls are an interesting feature such as never was attempted on this scale before. They probably convey to the uninitiated a fairly clear idea of the planning, but without the completed walls and ceilings are of necessity far from convincing. They do not reach the ideal but are at least an advance on the road to it; the accessories we should especially hope to see improved.

The collection of drawings under the galleries of the Conference Hall falls short of what might have been expected if it had been possible to tap all the sources of supply, which probably were not available. A large number of lay-out plans, some of them on a large scale like those of Sheffield, convey some idea of the activities in progress. Unless one can follow the contour lines and other matters with local knowledge they do not convey a meaning of their real value. Some of the cottage drawings show excellent results. But there is nothing of a very fresh or striking kind. We shall probably get nearer to the right thing as time goes on, but the completely satisfactory economic and artistic cottage, homelike, pleasing and durable, is not yet before us in these exhibitions.

LABOUR-SAVING DEVICES.

The labour-saving appliances divide naturally into two classes—those which assist in the construction, and those which assist in the maintenance of the house. Of the former class, the exhibition contains nothing very new, although much that is good.

Site-moulded concrete blocks are undoubted savers of labour, particularly where suitable aggregate is at hand, for they require less transport and they are quicker to manufacture and to lay than bricks. There are a number of concrete block-machines. One of the simplest, both in mechanism and operation, is that shown by the Australia Concrete Block Machine Syndicate. A simple appliance for constructing monolothic concrete walls, either hollow or solid, is the Scruby-Harkness building mould. It measures 18 in. × 9 in., and makes a wall 3, 4, 5 or 6 in. thick. The method of working is to stamp the mixture into the mould, which is moved along horizontally, fitting closely on to the built position of the wall. It is claimed that the mould can also be used for making separate blocks.

On the stand of Messrs. Winget, Ltd., concrete mixing machinery, with both petrol and electric drive, and "Winget" pressure and hand-block-making machines are on view.

Another means of saving labour is by mass-production in factory or workshop. The steel-frame system of house construction, patented by Messrs. Dorman, Long & Co., of Middlesbrough, embodies this principle. The steel-work required for walls, floor and roof, is made to standard sizes in the workshop; it is capable of speedy erection, all the parts being numbered ready for assembly on the site. The walls are covered with "Hy-Rib" expanded metal and concreted. The completed front elevation to the house—a replica of one of the houses erected at Dormanstown—shows conclusively the possibilities of the new methods of concrete-construction to exacting demands for good design

Much labour has been wasted in the past in the preparation of details for wooden casement windows; and even if steel casements were used, considerable complications arose, owing to the different sizes favoured by the various makers. Now, however, since the principal makers have formed themselves into the Steel Window Association, such wasted energy should become a thing of the past. The Association shows many standard types of steel casements and frames, some of them with their split bar and top-hung upper portion opening outwards, designed to overcome the difficulty which has been so frequently met with in the past of obtaining a more finely adjustable means of ventilation for bedrooms. The different units are capable of a diversity of combination to satisfy various demands and conditions.

Of labour-saving devices for the equipment of the home there are many. The number of servantless dwellings, either from preference or necessity, tends to grow rather than to diminish, and one result is the development of the "living-room," which combines the function of both kitchen and reception room. A cooking range is, however, often an unsightly, cumbersome, and moreover—when the household is small—a superfluous adjunct, besides being costly in maintenance. Messrs. Howell & Bowman, Ltd., show a "Triplex" grate, which will carry out all the work necessary for a small dwelling; providing adequate cooking facilities, hot water supply for domestic purposes, and having a pleasing appearance which is so essential in a room called upon to do double office. Another problem in the servantless house or flat, whose inmates are engaged during the day, arises through the call of the tradesman to deliver his goods at an empty dwelling. The "Receivador" is an extremely useful invention which overcomes this difficulty. It consists primarily of a double back door, divided into two, three or four compartments. As soon as a tradesman deposits his goods in one of these compartments, whose lock shows "vacant," he closes the door, which automatically locks. The goods can be extracted from the inside, and the closing of the inner door automatically releases the lock of the outer door. The door

is a most useful and ingenious device and costs from £8 10s. to £15 15s.

The process of "washing-up" is an unpleasant task at the end of a hard day's work; and, but for the necessity of it, many persons might be able to dispense with the little domestic assistance which they now employ. A portable apparatus for carrying out this unpleasant duty is made by Messrs. James & Copeland, Ltd. It is intended that it should be stood over the sink and attached by a flexible connection to the hot-water cock.

A number of labour-saving appliances are exhibited by the General Electric Co., Ltd. These include small portable cookers, vacuum cleaners of various sizes, and electric hot-water radiators. A particularly useful apparatus is the "Magnet" pedestal heater, which can be used both to heat a small room or to toast or boil. The consumption is 600 watts and the price varies from 47s. 6d. to 75s.

The "Quicksey" kitchen cabinet made by the Nautilus Fire Company, Ltd., should prove extremely useful in a kitchen or scullery, where space is restricted. It contains all the cooking utensils required for a small household ready at hand and systematically arranged.

Throughout the exhibition, the observant visitor, whether he be professional or layman, will find much of interest that will enable him either to build or to conduct his house with an infinite saving of costly labour and drudgery.

The Stands.

Building Construction. — This section is especially interesting owing to the number of examples shown of new methods of construction approved by the Ministry of Health for use in housing schemes. These range from the latest systems of steel and concrete to *pisé-de-terre*, and, except in the official exhibits, brickwork is hardly to be seen at all. Messrs. Vickers, Ltd., have erected a cottage with concrete blocks of the size of ordinary bricks and concrete tiles stained to the colour of common red tiles. At a glance, the cottage has the appearance of ordinary brick and tile construction, and it is only on closer observation that the fact that concrete is used can be discerned. The whole of the building, fittings and furniture have been manufactured by the Vickers Co. and its associated firms. The Economic Building Corporation, Ltd., exhibit a cottage built on their concrete cavity wall system. Three sizes of blocks are used in the construction of a cottage on this system, and the walls are bonded in every course. The Simplex Construction Co., Ltd., show a bungalow erected of steel framing and concrete blocks. The interlocking steel joists are erected on concrete foundation blocks, and concrete slabs are fixed to battens connected to the joists, with an air-space between. Two types of expanded metal laths, a reinforcement for concrete floors and "Trussit" for reinforcing concrete walling are shown by the Self-Sentering Expanded Metal Works, Ltd. "Trussit" is so formed with ribs and meshes that with its use concrete walls can be erected without the aid of shuttering. The Unit Construction Co., Ltd., show many views of concrete cottages and factories built on the "unit" system, and a selection of specimens of concrete blocks. Walls and piers to illustrate the form of construction adopted by this company are shown by the Bonding Block Constructional Co., Ltd. Patent blocks, giving a cellular form of walling with staggered piers, are used. A specimen of the concrete and steel cottages built at Dormanstown is exhibited by Messrs. Dorman, Long & Co. Different portions of the cottage are left at various stages of completion to demonstrate the method of construction. Messrs. Bell's United Asbestos Co., Ltd., have erected a cottage built with "Hurcon" slabs. These slabs are of concrete with a finely-finished surface of "Poilite" asbestos-cement. "Poilite" flat and corrugated building sheets and tiles are also shown. On this stand also is shown the "Lovell" system of wall construction. This consists of piers built with special bricks with two grooves on one face. The grooves are so spaced that when concrete slabs are inserted into them a cavity wall is formed. For factory construction, where greater strength is needed, three walls, with two air-spaces, are used, and, of course, any number of walls can be used by enlarging the brick piers. Messrs. W. Alban Richards & Co., Ltd., show three types of walling, viz., concrete blocks, concrete and brick, and *pisé-de-terre*. The concrete blocks are used in connection with the ordinary type of cavity walling, while in the other system a cavity wall is formed with an internal wall of concrete slabs and an external wall of bricks laid flat. The two walls are tied together with galvanised iron strips. Samples of rammed earth suitable for cottage construction and a section of a *pisé* wall are shown, together with shuttering for use with this kind of construction. The Ironite Co., Ltd., show samples of "Ironite" cement and patent hollow building blocks. A sewage purification scheme, consisting of a liquefaction tank, an aerobic bacterial filter and a humus chamber, and a domestic water-softening plant capable of dealing with from 200 to 20,000 gallons of water per day is shown by Messrs. Tuke & Bell, Ltd. The uses of the "Rawlplug," for fixing into plaster, brick, &c., are demonstrated on the stand of the Rawlplug Co., Ltd. Types of wooden houses are shown by Messrs. W. G. Tarrant & Sons, William Thomas & Sons, Ltd., William Harbrow, Ltd., and Boulton & Paul, Ltd. The uses of "Ruberoid" roofing, in grey, green and red, are demonstrated by the Ruberoid Co., Ltd., by the reproduction of a small-scale villa on which it is used. The Wilfley Co., Ltd., show the well-known "Marbolith" jointless flooring, which has no seams or corners wherein dust can collect. A working model of domestic water softeners for both small and large houses is shown by Messrs. United Water-Softeners, Ltd. Various types of ladders, fire-escapes, telescopic ladders and portable scaffolding are shown by the Acme Patent Ladder Co. The British Léan Co., are showing their machine for making hollow concrete blocks; these blocks have three air spaces.

Casements.—Various steel window casements, door frames, partitions, &c., are on the stand of the Steel Window Association; this is a composite exhibit and includes the products of many well-known firms. Steel casements specially designed for small houses are also shown by Messrs. James Gibbons & Messrs. Williams & Williams.

Heating and Lighting.—Systems of heating and lighting, with open fires, stoves, gas and electricity, are well represented, and form a very interesting part of the Exhibition. Well-designed cooking ranges are shown by Messrs. Smith & Wellstood, Ltd., and the Carron Company exhibit several types of attractive open grates, and also the "Beetonette" cooking range. The London Warming and Ventilating Co., Ltd., exhibit the "Kooksjoie" anthracite range, the "Wifesjoie" one-ring gas cooker, which combines a constant supply of hot water, and the "Florence" boiler grate. The "Interoven" combined cooking and sitting-room grate (the "Interoven" Stove Co., Ltd.) is fitted with a large oven and hot-plate, and by a simple movement can be converted from a cooking range into a slow-combustion dining-room grate. The same firm exhibits the "Bewty" expanding, barless fire front, for rendering old-fashioned grates economical; these fronts can be adjusted to a fraction of an inch and fitted to any grate. The stand of the Eagle Range and Grate Co. contains several lines which have not before been exhibited, including a semi-independent boiler, fitted to a "Premier" range to give a constant supply of hot-water, an anti-deposit circulating boiler, a new portable range designed for working-class dwellings and a range suitable for burning either wood or coal. The Falkirk Iron Co., Ltd., exhibit a selection of "Falkirk" heating and cooking equipment, including the "Compax" combination. Among the exhibits of gas appliances may be mentioned: Messrs. Ajax Heaters, Ltd., a gas geyser which can be dismantled for cleaning purposes without disturbing the gas or water connection; Messrs. J. Glover & Sons, Ltd., the "Duck" oven, which simultaneously grills, boils and bakes by the heat of a single gas ring; Messrs. Ewart and Sons, Ltd., types of gas geysers giving a speedy hot-water service to bath, lavatory, &c., a complete bathroom and new model lavatory basins; the Stimex Gas Stove Co., Ltd., a large selection of gas ranges, cookers and hot-water circulators, and the "A 1" range, which provides heating, cooking and hot-water throughout the house; Messrs. Thomas Potterton have a selection of gas and fuel boilers and hot-water supply apparatus.

Electrical Apparatus.—The large number of exhibits of heating, cooking, lighting, and household appliances operated with electricity, demonstrate the numerous uses to which this motive power can be put in the home. If and when it can be supplied more cheaply there is undoubtedly a great future before electricity as a labour-saver in ordinary household routine. The "All-Electric House," designed by Mr. Albert J. Thomas, Lic.R.I.B.A., and fitted up by the General Electric Co., Ltd., is specially designed for people of moderate means, containing all kinds of electrical appliances, such as radiators, kettles, clothes-washers, cookers, vacuum cleaners, irons, grillers, lighting fittings and hot-water heaters. Messrs. Belling & Co. show a selection of electric heating, cooking and cleaning appliances for domestic use. The "Colec" system of radiant heating, which is a combination of coke and electricity, is shown by Messrs. Berry's Electric, Ltd., as also is the "Magicoal" electric fire. This fire fits any grate, and is a very good facsimile of a blazing coal fire. Messrs. Callender's Cable and Construction Co., Ltd., have carried out an electric wiring installation on the "Kaleseo" system throughout two rooms, and Messrs. Siemens Bros. & Co. show the "Stannos" wiring system. Electric lighting plants suitable for small houses are shown by the Austin Motor Co., Mann, Egerton & Co., Ltd., R. A. Lister & Co., Ltd., Arthur Lyon & Wrench, Ltd., the Aster Engineering Co., Ltd., and Studebaker, Ltd. Messrs. Benham & Sons, Ltd., have on exhibition the patent "Electro-Vapour" radiator, an electric range, electric irons, kettles, milk heaters, &c., and luminous radiators. Hot-water apparatus for all classes of buildings, cast-iron drain pipes and soil pipes and connections are shown by the Thames Bank (Blackfriars) Iron Co., Ltd.

Decoration.—The decoration section is particularly effective, and some good colour schemes are shown. Messrs. Jenson and Nicholson, Ltd., demonstrate the application of "Robbialac" enamel for house decoration, and a model after the style of the Nelson Monument in Trafalgar-square is used to show off the paints, enamels, varnishes, &c., manufactured by Messrs. Pinchin, Johnson & Co. Messrs. Paripan, Ltd., exhibit their special enamel in various colours with both glossy and dull finishes. Messrs. Major & Co., Ltd., have erected a wooden pavilion with which to illustrate the uses of "Solignum" wood preservative and stain as applied to outdoor and interior work. The uses of plywood to cover the interiors of walls as a preventive of dampness and for panelling are exhibited by Messrs. Venesta, Ltd. The "Noflame" Paint Co. are exhibiting samples of materials treated with their non-inflammable paints. Among the many furniture exhibits, Messrs. Higgs & Hill, Ltd., show some excellent copies of old furniture.

Profit Sharing and Co-partnership.

The Labour Co-partnership Association (6, Bloomsbury-square, W.C. 1) has published a pamphlet (price 3d. net) containing speeches by the Right Hon. Lord Robert Cecil, M.P., and the Right Hon. J. R. Clynes, M.P. These speeches form an illustration of the changed attitude of public men towards industrial problems. The human side of industry is recognised as of fundamental importance for the progress of industry and for the welfare of the State. Cross headings and special type are used to bring out the salient points. A list of other publications of the Association is given at the end.

HOUSING AND TOWN-PLANNING NOTES.

Model Houses at Acton.

The Ministry of Health has asked the Acton Urban District Council to allocate a site on the land acquired for housing schemes for use by the Housing Board for the erection of a number of houses to serve as models for other authorities.

Cost-plus-Profit Contracts.

The Newcastle-on-Tyne Housing Committee has recommended the Town Council to accept a scheme, negotiated with the Federation of Building Trades' Employers, whereby 400 to 500 houses in the city may be erected on a cost-plus-profit basis. The proposal, which has been approved by local builders, is that the maximum sum payable to builders be 5 per cent. above the tender recently accepted for 96 houses at Walker, Newcastle; and, subject to that, the actual payment be the cost of building, plus 7 per cent. net profit, the profit to be apportioned among the builders by a committee of their own, to ensure the builder producing the best results receiving the largest profit. If the cost is reduced below the tender, it is suggested the builder should receive 1 per cent. for every 5 per cent. of saving effected.

At Scarborough, last week, a meeting of architects and builders appointed a deputation to meet the Corporation to consider the advisability of erecting houses in the district on a cost-plus-profit basis. It was stated that the builders were willing to carry out the work on this arrangement.

The West Hartlepool Corporation has decided to enter into agreed-price contracts with the Hartlepool Master Builders' Association for the erection of a minimum of 300 houses, to be completed by December 31 next.

Rents of New Houses.

At a meeting of the Manchester City Council last week, Mr. Swales, deputy chairman of the Financial Committee, in moving the adoption of the Committee's report on housing, said the approximate cost of the city's schemes so far was over £6,000,000, an average cost of £921 per house. Supposing in 1927 the rent were put at two-thirds of the cost, an economic rent would be £1 0s. 9d. per week, exclusive of rates. The city would find a penny rate equal to £19,000, and the Government would have to find the difference, which would be £116,000. If the rents were to be based on half the cost of the house and the cost of the land, the economic rent would be 15s. 10d. per week, and the Government would have to subsidise the city to the extent of £183,000. If the rents were fixed at 10s., the Government would have to find £265,000. The report was approved.

The Price of Building Materials.

Further to his statements at a meeting of the London Property Owners' Association, Mr. A. G. Shearing (formerly chairman of the Works Committee of the St. Pancras Borough Council), in an interview with a newspaper representative, stated that he was in possession of absolute proof in his contention that "profits ranging between 800 and 1,000 per cent. are at this moment being made by the trusts in building materials over and above pre-war profits." If the combines were eliminated, he said, the cost of building materials might be reduced by one-half, and the total cost of a completed house by 25 per cent. "It can be established beyond question," he said, "that during the war the merchants had entered into an agreement with the manufacturers to charge for all goods supplied to them according to the schedule submitted on behalf of the combine. Under no other conditions can the articles be obtained." Asked to state a specific case in which profit had been raised by 1,000 per cent., Mr. Shearing took the case of 3-inch rain-water pipe. "This," he said, "used to be sold for 2s., and showed at that price a merchant's profit of 4d. The price is now 9s. 6d., and it gives to the merchant a profit of 3s. 8d. That is ten times more profit than was made before the war, or an increase of 1,000 per cent. A case of this kind, has been adjudicated upon by a profiteering tribunal, and the fine inflicted was upheld upon appeal."

WEEKLY HOUSING RETURN.

Details of local authorities' schemes dealt with during the week ended January 31, are as follows:—

Building Sites.

Schemes Submitted.—The number received from 64 local authorities was 110 (319 acres), bringing the total to 8,369 (57,000 acres).

URBAN.	ACRES.
Heston and Isleworth	30.96
Cambridge	27.40
Willenhall (2 sites)	21.98
Cramlington	21.58
Southport (2)	20.75
Gelligaer	12.57
RURAL.	**ACRES.**
Thingoe (9 sites)	17.00
Wilton	12.00

COUNTY COUNCIL.—West Riding (2 sites), 12.12.

Schemes Approved.—The number of schemes approved was 171, bringing the total to 4,068 (33,000 acres). The schemes newly approved are as follows:—

URBAN.	ACRES.
Coventry	133.73
Macclesfield	29.28
Withernsea	22.44
Dudley	20.18
Leiston-cum-Sizewell	18.28
Uttoxeter	17.82
Gelligaer	17.33
Tamworth	14.00
Nelson (2 sites)	13.61
Bedlingtonshire	11.01
Short Heath (3)	10.00
RURAL.	**ACRES.**
Llandaff and Dinas Powis	21.73
Penybont	21.65
Spilsby (23 sites)	21.53
Repton (17)	20.58
Swansea	17.31
Atherstone (3)	13.66
Hinckley	10.25
Cuckfield (3)	10.11

Lay Outs.

Schemes Submitted.—The following schemes were submitted, bringing the total to 2,404.

URBAN.—Aldershot, Arnold, Chesterfield, Croydon, Dudley, Farnham, Hessle, Irlam, King's Lynn, Kingston-upon-Hull, Llanelly, Matlock, Newbiggin-by-Sea, Nottingham, Oldham, Prestwich, Reigate, Swaffham, Tarporley, Tavistock, Walsall, Willenhall.

RURAL.—Atcham, Blaby, Branston, Bridge, Chester, Chester-le-Street, Chorley, Cowbridge, Epsom, Forehoe, Goole, Hadham, Keynsham, Lexden and Winstree, Market Harborough, Melford, Milton, Ogwen, Oxendon, Romford, Romsey, Samford, Sedgefield, Thrapston, Tonbridge, Warminster, Westbury and Whorwellsdown, Woodstock. COUNTY COUNCILS.—Herts, West Riding.

Schemes Approved.—The following schemes were approved, bringing the total to 1,755.

URBAN.—Arnold, Arundel, Ashby Woulds, Blackburn, Bushey, Chesterfield, Congleton, Croydon, Dudley, Erith, Grange-over-Sands, Heston and Isleworth, Hoddesdon, Irlam, Liverpool, Matlock, Nantyglo and Blaina, Nottingham, Prestatyn, Radcliffe, Ramsey, Rawtenstall, Southport, Standish with Langtree, Swaffham, Thame, Walsall, Wandsworth, Wokingham.

RURAL.—Amersham, Atcham, Banbury, Brixworth, Chester, Chorley, Disley, East Retford, Forehoe, Godstone, Goole, Hadham, Hambledon Hendon, Hitchin, Keynsham, Malpas, Melford, Milton, Okehampton, Oxendon, Romford, Romsey, St. Ives, S. Westmorland, Spalding, Tendring, Thrapston, Towcester, Whiston, Wincanton, Woodstock, Wycombe. COUNTY COUNCIL.—Hertford.

House Plans.

Schemes Submitted.—Schemes representing 9,681 houses were submitted by 86 local authorities. The total represents 102,512 houses.

URBAN.—London County Council, 116 houses; Arnold, 12; Barnsley, 49; Blyth, 100; Bootle, 16; Chesterfield, 18; Colchester, 38; Consett, 46; Cramlington, 242; Croydon, 59; Dudley, 30; Farnham, 24; Grimsby, 800; Guildford, 75; Hackney, 111; Hertford, 74; Hetton, 12; Irlam, 135; Keighley, 4; King's Lynn, 82; Kingston-upon-Hull, 130; Lincoln, 140; Llanelly, 33; Matlock, 30; Middleton; Newburn, 1,191; Newcastle-on-Tyne, 724; Nottingham, 72; Nottingham, 800; Ogmore and Garw, 22; Paignton, 69; Panteg 40; Petersfield; Reigate, 20; Southport, 52; South Shields, 1,000; Sunderland, 448; Swaffham, 10; Tarporley, 6; Tavistock; Tynemouth, 44; Walsall, 170; Walton-on-Thames, 14; Warrington, 6; West Hartlepool, 500; Worthing, 130.

RURAL.—Amersham, 22 houses; Atcham, 4; Bakewell, 50; Beverley, 2; Biggleswade, 26; Blaby, 200; Bourne, 80; Buckingham, 8; Castle Ward, 160; Chester; Cricklade and Wooton Bassett, 8; Easington, 200; East Preston, 15; Epsom, 12; Forehoe, 4; Hadham, 8; Hambledon, 6; Hinckley, 40; Hitchin, 86; Isle of Thanet, 28; Lexdon and Winstree, 52; Llantrisant, 334; Market Harborough, 40; Melford, 20; Milton, 8; Ogwen, 24; Oxendon, 12; Penrith, 6; Penybont; Peterborough, 32; Romsey, 4; St. Ives, 13; Samford, 5; South Westmorland, 6; Spilsby, 100; Steyning East, 4; Swansea, 206; Welton, 100; Westbury and Whorwellsdown, 4; Woodstock, 22.

COUNTY COUNCIL.—West Riding, 30.

Schemes Approved.—Schemes representing 11,887 houses were approved. The total approved represents 88,732 houses. The schemes newly approved are as follows:—

URBAN.—London County Council, 116 houses; Alnwick, 118; Arnold, 12; Arundel, 24; Ashbourn, 80; Ashby Woulds, 30; Bangor, 18; Bedlingtonshire, 114; Bentley-with-Arksey, 26; Blyth, 100; Bootle, 16; Bungay, 20; Chesterfield, 18; Colchester, 38; Congleton, 15; Consett, 46; Cramlington, 242; Crook, 228; Croydon, 59; Darlington, 27; Dudley, 30; Exeter; Grimsby, 800; Guildford, 75; Hammersmith, 100; Hendon, 92; Hertford, 74; Heston and Isleworth, 40; Hetton, 12; Holme Cultram, 26; Irlam, 135; Jarrow, 148; Keswick, 56; Kingston-upon-Hull, 130; Lincoln, 340; Llangefni, 10; Luton, 14; Matlock, 30; Nantyglo and Blaina, 184; Newburn, 1,191; Newcastle-on-Tyne, 850; Nottingham, 832; Ogmore and Garw, 22; Plymouth; Prudhoe, 90; Ramsey, 8; Rotherham, 408; Seghill, 40; Southport, 52; South Shields, 1,000; Stanley, 358; Sunderland, 448; Swaffham, 10; Thame, 8; Tynemouth, 90; Walsall, 170; Warrington, 6; Watchet; West Hartlepool, 500; Whiston, 10; Woking, ham, 14; Worthing, 130.

RURAL.—Alnwick, 212 houses; Amersham; 76; Atcham, 4; Bakewell, 50; Banbury, 4; Beverley, 8; Biggleswade, 26; Blaby, 200; Bourne, 80; Brixworth, 4; Castle Ward, 160; Chester-le-Street, 55; Cricklade and Wooton Bassett, 8; Easington, 370; Epping, 10; Foregoe, 16; Haltwhistle, 76; Hambledon, 18; Hinckley, 40; Hitchin, 6; Isle of Thanet, 18; Llantrisant, 82; Market Harborough, 40; Melford, 20; Milton, 8; Morpeth, 14; Okehampton, 9; Oxendon, 12; Penrith, 6; Romford, 24; Romsey, 10; St. Austell; St. Ives, 6; S. Westmorland, 34; Spilsby, 100; Steyning East, 4; Tendring, 22; Thrapston, 2; Welton, 100; Wincanton, 2; Witney, 6; Woodstock, 38; Wycombe, 10. COUNTY COUNCIL.—Herts, 2.

The British Industries Fair.

The British Industries Fair (Birmingham) is to be opened on February 23, and will remain open until March 5. The Fair is of a national and official character, and will include samples of all the manufactures of the Midlands.

NEW METHODS AND MATERIALS.

THE following new methods of construction have been approved by the Standardisation and Construction Committee and the Ministry of Health :—

Banger's Concrete Construction Co., Ltd., East Grinstead.—Reinforced concrete roofing tiles, 3 ft. long 1 ft. wide and about 1 in. thick. They interlock with each other, and are arranged with a continuous lug to hook over a rolled steel joist or grooved wood purlin. The tiles are self-fixing, and no nails are required. Also a concrete building block, made in two thicknesses, and fitted with a steel handle for fixing, the handle being removed when the block is laid. By this means both thicknesses of the cavity wall are formed in one operation.

Major W. O. Pearce, Russell Hotel, W.C.—Reinforced concrete construction formed with pre-cast slabs with flanges at the ends, which fit together, and, with reinforcement grouted in, form stanchions. The blocks interlock at each course, and the vertical steel rods are reinforced with stirrups at each course bedded in the grouting.

The Combined Concrete Construction Co., Ltd., Manchester.—A combination of hollow tiles and concrete, the outer walls being of two thicknesses of hollow tiles 4 in. thick, having a 1-in. cavity between them, filled in with thick cement grout. Similar tiles are used for floor construction in connection with T-irons, the spaces between and over the tiles being filled in with fine concrete and forming a series of T-concrete beams.

The Self-Centring Expanded Metal Works, Ltd., West-street, E.C.2.—"Trussit" re-inforcement in the external thickness of a concrete wall, approved, subject to the reinforcement being embedded in plaster or fine concrete for a thickness of at least ½ in. on each side.

R. C. Littlejohn, Northam, Devon.—Concrete block manufacture.

Stewart and Partners, Ltd., Berkeley-street, W.1.—Pre-cast concrete with pre-cast reinforced columns, built up in sections. The beams at first floor and roof carrying loads are formed of *in situ* reinforced concrete. The spaces between the stanchions are filled with thin slabs, forming a cavity wall, the external slab being of ballast concrete, and the inner of clinker concrete.

W. Calway, Swansea.—Moulds with either fixed or travelling cores, in which the concrete is consolidated section by section and course by course until the entire wall is completed in one piece.

J. Ormrod & Son, Waterloo, Liverpool.—Concrete block construction, with continuous vertical cavity throughout the wall, the standard size of the block being 18 in. by 6 in., by 9 in.

The National Brick Co., Ltd., Heather, Leicestershire.—Hollow terra cotta interlocking building blocks 6 in. on beds with skins and webs not less than 1 in. thick.

THE BUILDING GUILD.

IT is stated, on the authority of the Labour Party, that the proposal to form a building guild for the carrying out of building operations by the operatives is rapidly spreading throughout the country. In addition to Manchester, plans for the advancement of guild organisations are well advanced in Warrington, Wigan, and Bolton, and the question is being discussed in London and other places. The National Federation of Building Trades' Operatives is to hold a conference on the subject at Manchester, and it is stated that there is every likelihood of the scheme being adopted nationally.

The Irlam Housing Committee has accepted an offer of the Building Guild to erect 1,000 houses, subject to the approval of the Ministry of Health. The Council will pay the wages bill plus 10 per cent., which will compensate the operatives for unavoidable lost time, and charges for plant and transport will also be met out of this sum. The materials will be supplied to the Guild by the Council.

ANCIENT COTTAGES AND MODERN REQUIREMENTS.

IN the course of a lecture read before the Royal Society of Arts recently, Mr. Alfred H. Powell expressed the opinion that the deep impression made by old buildings was because old and mediæval building was democratic in the sense that it was a folk-speech, whereas new work of the present time was bound to be the result of individual effort. He would like to see a serious attempt made to schedule all the earlier little buildings of England with a view to their proper preservation and treatment, and for this purpose he would call any serious building put up before 1700 an ancient building.

With regard to the proper treatment of old cottages with a view to their re-use under improved conditions, it was only possible to speak generally. No old cottage need be condemned to destruction that had its outer shell still in fair condition. It would be cheaper to mend it and re-cast the interior than to build a new one. There was a widespread disorder common to all old cottages which had been the chief cause of dilapidation, illness and expense, and that was the inefficient disposal of rain-water from the roofs, and the consequent soakage of the ground. Most ancient buildings had no foundations and no damp-proof courses, and though originally, perhaps, that was no disability, yet surface soakage would let down any wall in time by softening the once firm ground and the slow disintegration of the lower parts of the wall. Foundations and damp-courses were, he thought, much over-rated, and could in a great many cases be safely dispensed with, provided proper attention was given to surface drainage. In many stone-built houses—for example, in Rutland, Northamptonshire, Gloucestershire, and Wiltshire—the stones were bedded in the ordinary soil of the district, and not intended to resist this continual soakage, as was often seen by the sheathing of the wall bases with large flat stones, and by the rough stone drainage which was common in Gloucestershire. A damp-course in such buildings merely served to retain accidental moisture.

In timber buildings the usual plan was to lay balks of oak along the ground for a foundation, sometimes on mason and brick work, sometimes not, and these were greatly damaged by continued neglect of the surface drainage. If the foundation timbers were past work new ones should be inserted to take the uprights as before. In Surrey and Sussex cottages, a wedge-shaped cut was made some 6 or 7 ft. from the ground in the vertical timbers of the wall frame. These were made to take shoring pieces, and could be so used to hold up the framing while a new footing to the wall was inserted. When a stone or brick building had become cast, or out of the upright, it had often been found a simple matter to push it into the vertical again with shores and wedges. If it was a timber building, it would generally be enough to strengthen the joints in all the vital parts with iron straps. The chances were that it would have taken its new bearings, and any attempt to restore its verticality would be hurtful.

The next step was to get the roof right. In certain cases mortices might be lengthened to allow non-uprights to be moved along in them—repinned—and the old mortice filled in. In oak roofs, or in some cases roofs of fir, the timbers would be perished on the surface but quite sound otherwise and in no need of renewal. Old roofs had been pulled down whose timbers would have lasted another 100 years at least if kept dry. If rooms were too low it was often quite easy to raise the entire roof without removing a rafter, by jacking it up slowly with a number of jacks placed so as to take the weight at the constructional points. For this purpose it was only necessary to have raking shores, loose at the bottom end and attached to the wall-plate, so that with each screwing of the jacks the shores also rose and could be wedged, thus avoiding any risk of collapse. If the lower rooms were too low, the small timbers of the floor could be cut off at the wall face, a slot made in the wall to let the main beam move upwards, and beam and floor raised together. Then fill in the walling below the two ends of the beam and lay a wall-piece across to take the ends of the shortened joists.

Solid floors were best made dry by a thick layer of dry, broken rubbish covered with 2 or 3 in. of cement concrete.

Generally speaking, all by-laws should be got out of the way in favour of local common-sense. An old building deserved to be treated with all respect, such as the use of oak to repair an oak frame—or an oak floor—the use of stone lintels in a stone house rather than concrete, and so on. Workmen now could not understand true finish. A bad piece of work well sand-papered or puttied up was for them "finished," except in rare cases in the more out of the way parts of the country where good habits still prevailed.

Many windows seemed too small that became large enough when made to open; in bedrooms it was generally an easy matter to add dormers or heighten tiny windows without any damage to the proportions of the house. Downstair windows, where the rooms were 7 ft. high, could be safely taken up to within a few inches of the ceiling. Where a cottage possessed any remarkable feature, such as a mediæval window frame, with stone or wooden moulded mullions, it was better to introduce a new window altogether and leave the old alone after due mending.

For new out-buildings, use local materials and if possible local workmen, weather boards, cob, rough walling, thatch or tiles as in the main house; but the work should be done well, well planned and well finished, for it was in the completeness of ancient work that so much of its character lay.

NOTES FROM THE FOREIGN PRESS.

CINDER-STONE MANUFACTURES.

AT some large gas-works, notably at Heidelberg, Fürth, and Stuttgart, and other works where cinder or slag is produced, the manufacture of artificial building stone has been undertaken. The stone is produced in blocks, usually 10 by 12 by 25 centimetres. It is formed of a definite mixture of cinder and cement, with either sharp sand or limestone. Its resistance varies, according to the composition, from 20 to 50 kilograms to the square centimetre. Thus 1 cement to 8 cinder gives a resistance of 20.5 kilogrammes, while 1 cement to 6 cinder and 2 sand gives a resistance value of 51.5 kilogrammes. Commonly adopted proportions are: 8 parts of cinder sifted to 10 mm. size; ¾ parts cement; and ¼ limestone, which give a resistance of about 30 kilos, and sufficient for the walls of ordinary buildings. Only such cinder is suitable for this manufacture that has lain in the waste heap for a considerable time. Chemical action takes place in waste heaps, which action must be left to work itself out. This is especially important where sulphate of lime may be formed. The presence of magnesia is objectionable on the ground of its forming magnesium salts, which, being hygroscopic, tend to keep the walls damp. If limestone is used in the place of sand, it should be of an hydraulic nature. The sand should be clean; *i.e.*, free from clayey matter. In some gas-works the manufacture is carried on entirely by hand-labour, iron forms being used to shape the blocks. One man using these moulds, can make in an eight-hour shift from 400 to 500 blocks. In from three to four weeks the blocks are sufficiently set for use. (Dr. Karl Bunte, *Journal für Gasbeleuchtung.*).—*The Technical Review.*

Proposed New Piccadilly-circus Building.

It is reported that Messrs. Harrods, Ltd., have offered to purchase the business of Messrs. Swan & Edgar, and to erect a large new building on the site. The premises have a frontage to Piccadilly and Regent-street of 800 ft.

THE BUILDING TRADE.

THE DIFFICULTY OF OBTAINING CONTRACTS.*

WHILST competitive tendering, resulting in a contract either for a lump sum or on a schedule of rates, has hitherto held the field, and solely from an employer's point of view may still be the most desirable method of building, there has arisen during and since the war certain factors which make it less easy to ensure a continuance of this method. For instance, the following have to be taken into account:—(1) The difficulty in providing labour; (2) the uncertainty as to rates of wages; (3) the varying efficiency of labour; (4) the shortage of material, uncertainty as to price, and delays in delivery. Some of these factors can and must be provided for in any contract, however it is framed, and other reasons must, therefore, be sought to account for the assumed unwillingness of builders to submit competitive tenders. Although it cannot be said that the system of tendering on a lump-sum basis has broken down generally, there is sufficient evidence of a change in the views of employers and contractors to justify careful consideration of alternative methods of settling building contracts.

Cost-plus-profit Contracts.—Lord Colwyn's Committee on Building Contracts, in its report issued during the latter days of the war, favoured a system of cost-plus-fixed-profit contract, but strongly recommended the adoption of lump-sum contracts as soon as conditions permitted. But however fair it may seem to builders, and however much it may suit them, to urge a system of cost-plus-profit contract, even though the profit is fixed, it will be hard indeed to get public bodies, for purely civil work, to enter upon the unknown liabilities which such contracts involve.

An Alternative Cost-plus-profit Contract.—There is, however, a scheme which has been adopted in more than one case which, although it resembles closely the previous method, and is not free from the objection of unlimited liability, yet is of such a nature in respect of the inducement it offers to a builder to secure economy that where the conditions are favourable it is worthy of consideration.

A basis price is fixed, representing prime cost together with an agreed percentage for use of plant and administration, and similarly an agreed percentage for net profit. The builder is paid whatever the work costs under any circumstances, including a percentage at the agreed rate upon such cost for plant and administration. If this cost works out at less than the estimated prime cost, the builder is still paid the agreed amount of the percentage on the original estimate for plant, administration and net profit, and in addition a proportion of the amount of the saving. If, however, the actual cost works out at more than the estimated prime cost, he is paid, in addition to such cost, the percentage at the agreed rate for plant and administration, but his net profit is eaten into until, if the combined prime cost and percentage for plant and administration equal or exceed the basis price, including net profit, the latter is lost to him altogether.

An example would work out as follows:—

Estimated prime cost	£50,000
Plant and administration (4 per cent.)	2,000
Net profit (5 per cent.)	2,500
Basis price	£54,500

If there were a saving on the estimated prime cost in execution of, say, £2,000, the builder would receive:—

Actual prime cost	£48,000
Plant and administration (4 per cent.)	1,920
Net profit (as before)	2,500
Proportion of saving (say 20 per cent.)	400
Total payment	£52,820

If, on the other hand, the estimated cost were exceeded by, say, £2,000, the builder would receive:—

Actual prime cost	£52,000
Plant and administration (4 per cent.)	2,080
Net profit reduced to	420
Total payment	£54,500

In any case, any increase or decrease in the standard rate of wages or in the cost of materials, subsequent to the signing of the contract, is the subject of adjustment according to the terms of the model form of contract, without affecting the profit of the builder.

Great care must necessarily be taken in entering upon any contract of this nature; it is almost more important to be satisfied that the prime cost estimate is reasonable and that the percentage for plant and administration is not too high than to quarrel with the reasonableness of the percentage for net profit. The reputation of the builder and his experience must also be important factors; but the method is not to the same extent open to the chief objection of the ordinary cost-plus-fixed-profit contract, viz., that there is no distinction between the efficient and inefficient contractor, inasmuch as with one of the latter class, on the system described, though he may not lose money, he risks making none.

Even in these days, when it is impossible to deny that there is a no less element of uncertainty in building than was formerly the case, is it too much to expect a builder to have sufficient confidence in his own judgment to be willing to back it? Do not other traders take similar risks, and is not the builder's judgment and experience that for which a customer pays? If there is at the present time an unwillingness on the part of contractors to take contracts for housing schemes, the reasons, some of which are equally applicable to other kinds of contracts, would seem to be that a builder can get as much work as he wants without tenders, that he is not used to building small houses, that repair work and commercial and industrial building are more in his way, and that there is little inducement to cut prices. Another potent reason is the fear that if the established builder gets tied up with housing contracts he may find a neighbour and rival in the trade securing his private customers, owing to the latter's freedom from the embarrassment of large contracts which make demands to the fullest extent upon his energies and the supply of labour and materials. The speculative builder may yet come into the field with an enlarged vision and a mind improved by the higher standard he now sees is required, but for the large housing schemes we turn, perforce, to the large builder and contractor. It only needs to be put straight up to the builder to see the thing through by some satisfactory method and at a reasonable remuneration in order to secure his co-operation.

These are the days of collective bargaining, and in the Federation of Building Trades' Employers and the various local associations of master builders, local authorities have at hand, for the most part, the means by which contracts can be arranged at agreed prices. One hears much about a better understanding between employer and employed, and the need for mutual confidence, but may not here be found the test for such mutual confidences in a business relationship not generally included when reference is made to this desirable attitude? At all times, but especially when everyone's help and energy are required, is not co-operation a better means for all to reach the goal successfully, than competition among those who have the same object in view? Builders are not slow to recognise that, quite apart from their special responsibility as such, they have a large and direct interest in securing that the working-classes, of whom they are amongst the largest class of employers, are well and sufficiently housed. Local authorities, some of whose members may think they are not doing their duty if they do not see contractors competing one against another, may hint at rings and combines, but the whole spirit of an agreed price contract is based upon confidence and respect for each other's position, and although one cannot but sympathise with the views of hesitating local authorities, they will doubtless see that there is something to be said for a course which, if worked in genuine union with the main part of the building industry, may well prove to be sound and economical.

If by collective bargaining a satisfactory price can be arranged, it will be the means of securing a larger number of contracts within a given time and of spreading the work amongst a larger number of builders. In this way, builders could voluntarily leave to each other a proportionate part of private and repair work. The system would also have a wholesome effect upon the operatives, who would know that there was no case of profiteering.

Settling Contracts.—In settling agreed-price contracts, the following procedure seems the simplest. The Builders' Federation and the local authority having agreed for a definite number of houses to be erected within a definite time, the local authority's quantity surveyor and the Regional Surveyor of the Housing Commissioner agree between themselves what is a fair price for the job. The representative of the builders then meets the surveyors, having previously seen a copy of the bills of quantities, and the three discuss the detailed prices and arrive at an agreement. This is reported to the Federation and the local authority, and when the former has arranged for the distribution of the work amongst its members, separate contracts are entered into between the local authority and the builders for the houses they respectively undertake to erect at the agreed price. With the approval of the Federation, the local authority may employ outside builders; and in any case they may do so if the capacity of the local Federation is exhausted, but on the same terms for the same class of houses.

Direct Labour.—Direct labour may be productive of good results, but it will seldom be possible on a large scale and will probably only be successful in the case of local authorities who have already had experience of such undertakings. There may often be an enthusiasm and a new spirit shown in this class of work which will be reflected in the result, and the criticism of the ratepayers will prove a salutary safeguard to over-optimistic officials.

Quantities.—In rural districts, to many a capable and honest builder a bill of quantities is a puzzle that makes his head ache, and when asking for tenders in such cases it may be better to obtain sanction from the Housing Commissioner to dispense with quantities. In addition to the probability of saving expense, there is no doubt of the saving of time. In the case, however, of agreed-price contracts, in which several builders are jointly concerned, it does not seem advisable, or, indeed, possible, to do without quantities, which, of course, are more necessary where a large number of houses are involved and where the adjustment of a small variation may represent a considerable sum of money.

Discussion.

MR. A. G. WHITE (Secretary of the National Federation of Building Trades' Employers) said that the question was largely becoming a psychological one, because the old circumstances where both workmen and builders had to run after work and were very glad if they could capture a reasonable share of it after strenuous competition, had disappeared. This meant that both builders and operatives had the opportunity for the first time of a considerable range of choice as to which work they would take. At present there was a great demand for the services of builders, and the demand for operatives was greater than could be supplied. The

* Abstract of Paper read by Mr. F. M. Elgood, O.B.E., F.R.I.B.A. at the R.I.B.A. Housing Conference.

workman's position was that he could choose the job nearest home and would not go away from home unless it was made worth his while. Anyone would want some inducement to leave home, and the attitude was perfectly reasonable and natural and was appreciated by the employers. Difficulties such as these cost money, and that affected the cost of the houses. The employer was in exactly the same position. He was bombarded by clients with claims for his services and he had to try to please everybody. But, of course, he only took the jobs which would please him most and be the most profitable. Before the war, the average contractor never took housing work unless he wanted it to keep his staff about him. Some contractors made rather a practice of erecting houses, but they only took it on at times when prices of materials were very low. The whole question of small house construction was a kind of Cinderella, and nobody would touch it if they could get anything else. The position was the same to-day, and the problem was to make housing work attractive to employers and workmen. The Employers' Federation was associated with the Operatives' Federation on the Building Trades' Industrial Council and had seriously endeavoured to forward the movement. The Resettlement Committee of the Industrial Council, in conjunction with the Ministry of Health, had suggested a most suitable and practical solution, and in the opinion of the Employers' Federation this scheme should be adopted. It was intended to prevent what happened during the war, when operatives were taken about the country to suit the convenience of a few large employers. This scheme would enlist the support and interest of the largest number of employers and workmen in each locality, and was expressly framed for the purpose of distributing work locally. The Federation had urged upon its members that, whether they liked it or not, it was their duty to take their share of housing work, and they had been informed that unless they took their share worse things might befall them. The Federation had given a lead in the strongest way, and had suggested that builders should be content with a limited profit for this class of work. Mr. White then gave particulars of the scheme proposed by the Federation, whereby profits would be limited to from 5 to 7 per cent., details of which were given in our last issue.

PROF. S. D. ADSHEAD, F.R.I.B.A., speaking from the point of view of the architect who had to advise the local authority as to obtaining tenders, said that if all competition were eliminated no good at all would be done. He suggested that some arrangement be come to whereby both architect and builder had fair play and whereby real competition would be obtained. The builder who submitted the lowest tender should get some advantage, and nobody else should take part in the work.

MAJOR HARRY BARNES, M.P., F.R.I.B.A., said that the lump-sum tender had broken down. It was impossible to apply tendering to housing work for the reason that there was a large amount of much more remunerative work to be had in industrial and commercial building. People building factories and shops did not mind how much they cost, as they would make money out of it; but with housing every penny had to be considered, and the builder was faced with the fact that the local authorities and everybody else were endeavouring to keep the cost down as much as possible. Under this system, the contractor would not tender. The contractor had to take two uncertainties—the cost of labour and the cost of materials—and make them into one certainty—his fixed price for a building. The uncertainty as to the cost of labour was so great to-day that the contractor had to add an enormous sum to cover it, with the result that the cost of a cottage was as much as £1,000 and more. The problem of building was the problem of the architect, builder and workman, and if the architects' societies had been approached as the builders' associations were in the early days of the housing problem, much better results in the way of design would have been obtained. Much depended on the attitude of the operatives, and unless they were satisfied with the arrangements and their suspicions of profiteering were dispelled, progress could not be made.

RATES OF WAGES IN THE BUILDING TRADE.

THE following are the present rates of wages in the Building Trade in the principal towns of England and Wales. It must be understood that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur :—

	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters	Masons' Labourers.	Bricklayers' Labourers	Plasterers' Labourers.
Aberdare	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/6½	1/6½	1/6½
Accrington	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/5½–1/6½		
Altrincham	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/7½–1/7½		
Ashton-under-Lyne	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/7½–1/7½		
Barnsley	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/6½	1/6½	1/6½
Barrow-in-Furness	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/7½–1/7½		
Barry	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/6½	1/6½	1/6½
Bath	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/4½	1/4½	1/4½
Bedford	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/5½	1/3½	1/3½	1/3½
Birkenhead	2/–§	2/–§	2/–§	2/–§	2/–§	2/–§	2/–§	1/4½	1/4½	1/4½
Birmingham	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/10½	1/8½	1/8½	1/8½
Bishop Auckland	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/8½	1/8½	1/8½
Blackburn	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/5½–1/6½		
Blackpool	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/5½–1/6½		
Bolton	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/7½–1/7½		
Bournemouth	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/5½	1/2½	1/2½	1/2½
Bradford	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/8½	1/8½	1/8½
Bridgwater	1/4½	1/4½	1/3½	1/4½	1/4½	1/4½	1/4½	1/2½	1/2½	1/2½
Brighton	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/5½	1/3½	1/3½	1/3½
Bristol	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/6½§	1/6½§	1/6½§
Burnley	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/5½–1/6½		
Burton-on-Trent	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/6½	1/4½	1/4½	1/4½
Bury	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/7½–1/7½		
Cambridge	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/5½§	1/3½§	1/3½§	1/3½§
Cardiff	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/6½	1/6½	1/6½
Chatham	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/5½	1/3½	1/3½	1/3½
Chelmsford	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½	1/1½	1/1½	1/1½
Cheltenham	1/6½	1/6½	1/6½	1/6½	1/6½	1/7½	1/6½	1/4½	1/4½	1/4½
Chester	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/5½§–1/6½§		
Chesterfield	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/8½§	1/6½§	1/9½§	1/6½§
Colchester	11	11½	11½	1/–	11	1/–	9½	8½	8½	8½
Coventry	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/10½	1/8½	1/8½	1/8½
Crewe	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/3½–1/3½§		
Darlington	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/8½	1/8½	1/8½
Derby	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/8½§	1/6½§	1/6½§	1/6½§
Doncaster	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/6½§	1/6½§	1/6½§
Dudley	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/6½	1/4½	1/4½	1/4½
Durham	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/8½	1/8½	1/8½
East Glam. and Mon. Valleys	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/6½	1/6½	1/6½
Exeter	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/4½	1/3½	1/3½	1/3½
Folkestone	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½	1/1½	1/1½	1/1½
Gloucester	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/5½	1/3½§	1/3½§	1/3½§
Grantham	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/6½	1/4½	1/4½	1/4½
Grays	1/11½§	1/11½§	1/11½§	1/11½§	1/11½§	2/–§	1/10½§	1/8½	1/8½	1/8½
Grimsby	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/8½	1/8½	1/8½
Great Yarmouth	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/3½	1/2½	1/2½	1/2½
Guildford	1/6½	1/6½	1/6½	1/6½	1/6½	1/7½	1/5½	1/3½	1/3½	1/3½
Halifax	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/8½	1/8½	1/8½
Harrogate	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/6½§	1/6½§	1/6½§
Hartlepools	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/8½	1/8½	1/8½
Hastings	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/5½	1/3½	1/3½	1/3½
Hereford	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/5½	1/3½§	1/3½§	1/3½§
Huddersfield	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/8½	1/8½	1/8½
Hull	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/8½	1/8½	1/8½
Ipswich	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/4½§	1/3½	1/3½	1/3½
Lancaster	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/5½§–1/6½§		
Leamington Spa	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/6½	1/4½	1/4½	1/4½
Leeds	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/8½	1/8½	1/8½
Leicester	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/10½	1/8½	1/8½	1/8½
Lincoln	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/10½	1/8½	1/8½	1/8½
Liverpool	2/–§	2/–§	2/–§	2/–§	2/–§	2/–§	2/–§	1/8½§	1/8½§	1/8½§
Llanelly	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/6½	1/6½	1/6½
London	1/11½§	1/11½§	1/11½§	1/11½§	—	2/0§	1/10½§	1/8½	1/8½	1/8½
Loughborough	1/9½	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/8½§	1/6½§	1/6½§	1/6½§
Luton	1/9½§	1/6½§	1/6½§	1/6½§	1/6½§	1/6½§	1/5½§	1/3½§	1/3½§	1/3½§
Maidstone	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/5½	1/3½	1/3½	1/3½
Manchester	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/7½–1/7½§		
Mansfield	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/8½§	1/6½§	1/6½§	1/6½§
Merthyr Tydfil	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/6½	1/6½	1/6½
Middlesbrough	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/8½	1/8½	1/8½
Newcastle-on-Tyne	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/8½	1/8½	1/8½
Newport, Mon.	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/6½	1/6½	1/6½
Northampton	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/8½§	1/6½§	1/6½§	1/6½§
Norwich	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/4½	1/2½	1/2½	1/2½
Nottingham	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/10½	1/8½	1/8½	1/8½
Oldham	1/11½	1/11½	1/11½	1/11	1/11½	1/11½	1/11½	1/7½–1/7½§		
Oxford	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/4½	1/2½	1/2½	1/2½
Plymouth	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/7½	1/5½§	1/5½§	1/5½§
Pontypridd	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/6½	1/6½	1/6½
Portsmouth	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/5½	1/2½§	1/2½§	1/2½§
Preston	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/5½§–1/6½§		
Reading	1/7½	1/7½	1/7½	1/7½§	1/7½	1/7½	1/5½§	1/4½§	1/4½§	1/4½§
Rochdale	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/7½–1/7½§		
Rochester	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/5½	1/3½	1/3½	1/3½
Rugby	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/6½	1/4½	1/4½	1/4½§
St. Albans	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/6½	1/3½§	1/3½§	1/3½§
St. Helen's	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/7½–1/7½§		
Scarborough	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/6½§	1/6½§	1/6½§
Sheffield	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/8½	1/8½	1/8½
Shrewsbury	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/8½§	1/6½§	1/6½§	1/6½§
Southampton	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/5½	1/2½§	1/2½§	1/2½§
Southend-on-Sea	1/7½§	1/7½§	1/7½§	1/7½§	1/7½§	1/7½§	1/6½§	1/5½	1/5½	1/5½
Southport	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/5½§–1/6½§		
South Shields	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/8½	1/8½	1/8½
Stockport	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/7½–1/7½§		
Stockton-on-Tees	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/8½	1/8½	1/8½
Stoke-on-Trent	1/8½	1/8½	1/8½	1/8½	1/8½	1/9½	1/8½	1/5½	1/5½	1/5½
Stroud	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/5½§	1/3½§	1/3½§	1/3½§
Sunderland	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/8½	1/8½	1/8½
Swansea	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/6½	1/6½	1/6½
Taunton	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/3½§	1/3½§	1/3½§
Torquay	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/3½§	1/3½§	1/3½§
Wakefield	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/8½	1/8½	1/8½
Walsall	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/8½§	1/6½§	1/6½§	1/6½§
Warrington	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/7½–1/7½§		
West Bromwich	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/10½	1/8½	1/8½	1/8½
Wigan	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/7½–1/7½§		
Windsor	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/6½	1/4½	1/4½	1/4½
Wolverhampton	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/8½§	1/6½§	1/6½§	1/6½§
Worcester	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/6½	1/4½	1/4½	1/4½
York	1/9½†	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/9½§	1/6½§	1/6½§	1/6½§

The Masons' rate given is for bankers: fixers usually ½d. per hour extra. * War bonus of 3s. per week granted † War bonus of 3s. per week granted. ‡ War bonus of 3s. 6d. per week granted. ‡‡ War bonus of 4s. per week granted. ¶ War bonus of 7s. 6d. per week granted. § These rates include the 12½ per cent. bonus. [The above rates, unless otherwise shown, are exclusive of 12½ per cent. bonus.—ED.]

COMPETITIONS, CONTRACTS, &c.

For some contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this number. Contracts iv ; Competitions iv ; Public Appointments lxv ; Sales by Auction lxx. Certain conditions beyond those given in the following information are imposed in some cases, such as that advertisers do not bind themselves to accept the lowest or any tender ; that a fair wages clause shall be observed ; that no allowance will be made for tenders ; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

BUILDING AND PAINTING.

FEBRUARY 13.—**Nelson.**—DEPOT.—The Corporation invite tenders for the following works required in the erection of new car depot, at Reedyford, Nelson :—(1) Ferro-concrete, piers, roofs and floors ; (2) excavator, drainer, bricklayer, mason, &c. ; (3) carpenter and joiner. Particulars of the Borough Engineer, Town Hall, Nelson.

FEBRUARY 14.—**Blaenavon.**—HOUSES.—The U.D.C. invite tenders for the erection of 134 houses upon Elgam Farm. Detailed plans of the Architects, Messrs. Thomas & Morgan, & Partners, 23, Gelliwastad-road, Pontypridd. Deposit £5 5s.

FEBRUARY 14.—**Cricklade and Wootton Bassett.**—The Cricklade and Wootton Bassett R.D.C. invite tenders for the erection of 8 houses at Wootton Bassett, Wilts.

FEBRUARY 14.—**Hemel Hempstead.**—HOUSES.—The R.D.C. invite tenders for the erection of 10 cottages in five blocks of two, either as a whole or in part, in the Waterside portion of Kings Langley Parish. Specifications of the Council's architect, Mr. T. H. Lighbody, 20, Marlowes, Hemel Hempstead. Deposit, £1 1s.

FEBRUARY 14.—**Hythe.**—HOUSES.—The T.C. invite tenders for the erection of 42 houses on "The Green," Hythe, in three types. Quantities from Mr. J. Singleton Green, Borough Engineer, 114, High-street, Hythe, Kent. Deposit £2 2s.

FEBRUARY 14.—**Ogmore.**—HOUSES.—The Ogmore and Garw U.D.C. invite tenders for the erection of 22 houses, together with footways, sewers and incidental works, in connection with the housing scheme at Pantynawel, Blackmill. Quantities of Mr. A. H. Jenkins, housing surveyor, Council Offices, Brynmenyn, Glam. Deposit, £2 2s.

FEBRUARY 14.—**Rochford.**—The Council will shortly require tenders for the erection of 15 pairs of houses in the parish of Rochford.

FEBRUARY 14.—**Southport.**—HOUSES.—The T.C. invite tenders for the erection of eighty-eight houses at Crossens, Southport. Tenders are also required in one contract for the fencing, gate posts, and gates for the whole of the eighty-eight houses. Quantities of the Borough Engineer, Town Hall, Southport. Deposit £3 3s.

FEBRUARY 16.—**Clydebank.**—ALTERATIONS.—The Commissioners of His Majesty's Works, &c., invite tenders for alterations to Clydebank Employment Exchange. Quantities from the Principal Architect, H.M. Office of Works, 3, Parliament-square, Edinburgh. Deposit £1 1s.

*FEBRUARY 16.—**Dartford.**—Tenders are invited for the erection of a cinema theatre at Dartford, Kent, for the D.I.P. Theatres, Ltd.

FEBRUARY 16.—**Darlington.**—HOUSES.—The Corporation invite tenders for the erection of twenty-seven houses. Quantities at the Borough Surveyor's Offices, Town Hall, Darlington. Deposit £1 1s.

FEBRUARY 16.—**Edinburgh.**—WASHHOUSES.—The Corporation invites tenders for the various trades required in the erection of a public wash-house at Causewayside. Quantities of Mr. J. A. Williamson, City architect, Public Works Office, Edinburgh.

FEBRUARY 16.—**Guildford.**—HOSPITAL BUILDINGS.—The Guildford, Godalming and Woking Joint Hospital Board invite tenders for the erection of a new diphtheria block and a verandah to the Scarlet Fever Block at the Board's Isolation Hospital, at Woodbridge, Guildford. Quantities of the Board's architect, Mr. J. H. Norris, 51, High-street, Guildford. Deposit, £1 1s.

FEBRUARY 16.—**Leek.**—The Leek U.D.C. invite tenders for the erection of 138 houses, being the first instalment of a total of 242 to be erected on land off Buxton-road and Abbott's-lane, Leek.

FEBRUARY 16.—**Manchester.**—CONVENIENCES, &c.—The Tramways Committee invite tenders for the construction of public conveniences and shelter at Gorton Town Hall. Quantities of the City Architect, Town Hall, Manchester. Deposit £1 1s.

*FEBRUARY 16.—**Newport.**—Mr. Walter Rosser, M.S.A., invites tenders for the erection of the New Hospital, Aberbeeg, Mon.

FEBRUARY 16.—**Tilbury.**—FOUNDATION.—The U.D.C. invite tenders for the construction of foundation rafts in concrete and reinforced concrete for 1,520 cottages. Specification of Mr. S. A. Hill-Willis, Engineer, Council Offices, 47, Dock-road, Tilbury. Deposit £10 10s.

FEBRUARY 16.—**Whittington and Newbold.**—HOUSES.—The U.D.C. invite tenders for the erection of fourteen houses at Broomhall Park, Old Whittington. Quantities of Mr. W. A. Derbyshire, Architect, 91, Saltergate, Chesterfield.

FEBRUARY 17.—**Batley.**—EXTENSION.—Tenders are invited for the extension of a power house at Providence Mills, Batley. Quantities of Messrs. C. H. Marriott, Son & Shaw, Church-street Chambers, Dewsbury.

FEBRUARY 17.—**Batley.**—MILL EXTENSIONS.—Tenders are invited for extensions at Staincliffe Low Mills, Batley. Quantities of Messrs. C. H. Marriott, Son, & Shaw, Church-street Chambers, Dewsbury.

FEBRUARY 17.—**Bournemouth.**—HOUSING.—Invitations for tenders for the erection of the second instalment of cottages under the Housing Schemes of the Corporation are extended to February 17. Particulars of Mr. F. P. Dolamore, Borough Engineer, Municipal Buildings, Bournemouth.

FEBRUARY 18.—**Adwick-le-Street.**—FENCING.—The U.D.C. invite tenders for the erection of 420 lineal yards of creosoted wood fencing at reservoir site. Specification of Mr. G. Gledhill, surveyor, Adwick-le-Street. Deposit, £2.

FEBRUARY 18.—**Adwick-le-Street.**—HOUSE.—The U.D.C. invite tenders for the erection of a caretaker's house and meter house at the waterworks. Particulars of Mr. G. Gledhill, surveyor, Council Offices, Adwick-le-Street. Deposit, £5

FEBRUARY 18.—**Bishop Auckland.**—ADDITIONS.—The Guardians invite tenders for additions to porter's lodge. Quantities of Messrs. Kellett & Clayton, architects, 87, Newgate-street, Bishop Auckland.

FEBRUARY 18.—**Edinburgh.**—EXTENSION OF CAR SHED.—Mason, joiner, steel, plumber, glazier, and painter works of proposed extension of car shed accommodation at the Tramway Depot, Portobello. Quantities of the City Architect, Mr. James A. Williamson, A.R.I.B.A., Public Works Office, City Chambers, Edinburgh.

FEBRUARY 18.—**Liverpool.**—PAINTING.—Interior and exterior painting of the whole of the Highfield Military Hospital, at Knotty Ash, Liverpool. Specification of Mr. G. W. Coster, Clerk, Parish Offices, Brownlow-hill, Liverpool.

FEBRUARY 18.—**Oswestry.**—HOUSES.—The R.D.C. invite tenders for the erection of 160 houses at St. Martins. Quantities of the Architects (Messrs. Berrington, Son & Watney, Prudential Chambers, Wolverhampton. Deposit £2 2s.

FEBRUARY 18.—**Sutton, Surrey.**—The Metropolitan Asylums Board invite tenders for (1) the external and internal painting and repairs at the Downs Sanatorium, Sutton, Surrey ; (2) cleaning and painting work and repairs at the Children's Infirmary, Cleveland-street, London, W. 1 ; (3) alterations, &c., to engineer's house, The Eastern Fever Hospital, Homerton, E.

FEBRUARY 18.—**Swansea.**—The Borough Council invite tenders for the erection and completion of the first 20 houses in "blocks of four," Fforest-Fach, Swansea.

FEBRUARY 19.—**Edinburgh.**—HOUSES.—The T.C. invite tenders for the various trades required in connection with the erection of twenty-one blocks of dwelling houses at Gorgie. Quantities of Mr. James A. Williamson, A.R.I.B.A., City Architect, Public Works Office, City Chambers, Edinburgh.

FEBRUARY 19.—**Sunderland.**—ALTERATIONS.—The Corporation invite tenders for alterations and additions to Education Offices, Nos. 15 and 16, John-street, Sunderland. Quantities at 15, John-street, Sunderland. Deposit £3 3s.

FEBRUARY 20.—**Baildon.**—HOUSES.—The U.D.C. invite tenders for the erection of 26 houses. Particulars of Mr. Percy Turner, A.R.I.B.A., Architect, 23, Bank-street, Bradford.

FEBRUARY 20.—**Cosford.**—COTTAGES.—Erection of cottages in the parishes of Bildeston (6), Boxford (6), Gorton (4), Kettlebaston (4), Lavenham (12), and Polestead (4). Names to Mr. Alfred Newman, Clerk to the Cosford Rural District Council.

FEBRUARY 20.—**Howden.**—HOUSES.—The R.D.C. invite tenders for the erection of one or more pairs of houses up to 11 pairs in Howden (East Yorks.). Quantities of Mr. Stephen Piper, Council's Architect, Market-place, Howden. Deposit £1 1s

FEBRUARY 20.—**Market Bosworth.**—HOUSES.—The R.D.C. invite tenders for the erection of fifty-two houses at Ibstock and sixteen at Newbold Verdon. Quantities of Mr. Frank Bouskell, Clerk, Bank Chambers, Market Bosworth. Deposit £1 1s.

FEBRUARY 20.—**Rossington.**—SCHOOL.—The West Riding Education Committee invite whole or separate tenders for the erection of new school at Rossington. Quantities of the education architect, County Hall, Wakefield. Deposit, £1.

FEBRUARY 21.—**Aberdare.**—CONVENIENCE.—The U.D.C. invite tenders for the construction of an underground convenience at Victoria-square. Specifications at the Surveyor's Office, Town Hall, Aberdare.

FEBRUARY 21.—**Menai Bridge.**—HOUSES.—The time for the receipt of tenders for the housing scheme of the U.D.C. has been extended to date as above. Quantities at the Council offices, Dale-street, Menai Bridge.

*FEBRUARY 23.—**Deptford.**—The Council of the Metropolitan Borough of Deptford invite tenders for the erection of 51 houses at Brockley.

FEBRUARY 23.—**Johnstone.**—HOUSING.—Tenders are invited by the T.C. for the various trades in connection with the erection of 68 houses. Schedules from Messrs. Kerr & Watson's Union Bank Buildings, Johnstone. Deposit £1 1s.

FEBRUARY 23.—**Kirkcaldy.**—HOUSES.—Kirkcaldy District Committee. (1) Single cottage at Kilrie, Kirkcaldy ; (2) double cottage at Markinch ; (3) double cottage at Cross Roads, Buckhaven. Quantities from the Joint Architects, Mr. William Williamson, F.R.I.B.A., and Mr. George B. Deas, 220, High-street, Kirkcaldy. Deposit £1 1s.

FEBRUARY 24.—**Godstone.**—HOUSES.—The R.D.C. invite tenders for the erection of working class dwellings —at Addington (6), Blindley Heath (8), Crowhurst (6), Horne (6), Oxted (16), and Warlingham (12). Quantities of Messrs. Hayward and Maynard, 14, John-street, Adelphi, W.C.2 ; Mr. A. Keen, 4, Raymond Buildings, Gray's Inn, W.C.1 ; Mr. Granville Streatfield, 24, Old Buildings, Lincoln's Inn, W.C.2. Deposit £2 2s.

FEBRUARY 24.—**Gosforth.**—SHEDS.—The U.D.C. invite tenders for erection of cart and motor lorry sheds at North Depot, Regent Pit, Gosforth. Quantities of Mr. George Nelson, Engineer and Surveyor, Council Offices, Gosforth.

*FEBRUARY 24.—**Ilford.**—The Ilford U.D.C. invite tenders for the erection and completion of houses at Tomswood Hill, Barkingside.

FEBRUARY 24.—**Shoeburyness.**—PAINTING.—The U.D.C. invite tenders for painting the Council buildings, shelters, etc. Specifications of Mr. E. Reed, Surveyor, Shoeburyness.

*FEBRUARY 24.—**Willesden.**—The U.D.C. invite tenders for the execution of various works or to supply materials for a period of 4 or 12 months, commencing April 1, 1920.

FEBRUARY 25.—**Ashford.**—REPAIRS, &c.—The U.D.C. invite tenders for repairs and painting to various buildings. Specification of Mr. William Terrill, Surveyor, 5, North-street, Ashford, Kent.

FEBRUARY 25.—**Holborn, W.C.**—The Guardians of the Holborn Union invite tenders from contractors for certain works to be done at the Holborn Infirmary, Archway-road, Highgate, N., in the erection of an operating room, X-Ray room, &c.

*FEBRUARY 25.—**Merton and Morden.**—The Merton and Morden U.D.C. invite tenders for foundation work in concrete for 62 cottages, to be erected in Claremont-avenue, Raynes Park, S.W.

*FEBRUARY 25.—**Nottingham.**—HOUSES.—Fifty-six houses on the Coppice-road site, Nottingham for the T.C. Quantities of Messrs. Brewill & Bailey, 44, Parliament-street, Nottingham (in respect of 12 semi-detached houses). Mr. E. B. Hall, 12, Victoria-street, Nottingham (in respect of 26 houses in pairs and blocks of four). Mr. W. H. Taylor, King-street, Nottingham (in respect of 18 houses in pairs and blocks of four). Deposit £1 1s.

*FEBRUARY 25.—**St. Albans.**—Messrs. Fisk & Co., invite tenders for the erection of new business premises at St. Albans.

FEBRUARY 25.—**Twickenham.**—HOUSES.—The U.D.C. invite tenders for the erection of 133 houses on five partially developed sites. Quantities of the Surveyor, Town Hall, Twickenham. Deposit £2 2s.

*FEBRUARY 26.—**Lambeth.**—The Lambeth Borough Council invite tenders for the repair and decoration externally, of (1) The North Lambeth Library ; (2) Durning Library ; and (3) the West Norwood Library.

*FEBRUARY 26.—**Islington.**—The Council of the Metropolitan Borough of Islington invite tenders for the erection of 13 blocks of flats at the corner of Highbury Park and Highbury Grange.

FEBRUARY 26.—**Pontardawe.**—HOUSING.—The R.D.C. invite tenders for the erection of 14 semi-detached (parlour type) houses at Ystalyfera. Quantities of the Architect, Mr. H. Moss, A.R.I.B.A., Council Offices, Pontardawe.

FEBRUARY 26.—**West Ham.**—EXTENSION.—Extension to the X-Ray Room, Infirmary, Whipps-cross-road, Leytonstone, E.11, for the Guardians. Specifications of Mr. Francis J. Sturdey, F.R.I.B.A., 45, Finsbury-pavement, E.C. 2.

FEBRUARY 27.—**Dartford.**—PAINTING, ETC.—The Guardians invite tenders for sundry repairs and redecorations to the Infirmary Wards, at the Institution, West Hill, Dartford. Specification of Mr. Eustace J. Hobbs, Clerk, Guardians' Offices, West Hill, Dartford. Deposit £3 3s.

FEBRUARY 28.—**Hoyland Nether.**—HOUSES.—The U.D.C. invite tenders for the erection of 65 houses on the Hoyland-lane end site. Quantities of Mr. William Allen, Architect, Market-street, Hoyland, near Barnsley. Deposit £2.

FEBRUARY 28.—**Newcastle Emlyn.**—REBUILDING.—Tenders are invited for rebuilding of "Trewen" Congregational Chapel, Newcastle Emlyn. Specifications of the Architect, Mr. J. Howard Morgan, F.R.I.B.A., 24, King-street, Carmarthen.

FEBRUARY 28.—**Presteign.**—HOUSES.—The U.D.C. invite tenders for the erection of six cottages. Specifications of Mr. John Parker, Architect, St. Owen-street, Hereford.

*MARCH 1.—**Ashby Woulds.**—The U.D.C. invite tenders for the erection of 30 houses on Ashby-road site, Moira ; and construction of roads and laying sewers. Messrs. Baines & Provis, A.R.I.B.A. and M.S.A., Architects, 16, Friar-lane, Leicester.

MARCH 1.—**Gosport and Alverstoke.**—The Council invite tenders for the erection and completion of 64 houses on their Forton site.

*MARCH 1.—**Lewisham.**—The Council of the Metropolitan Borough of Lewisham invite tenders for the erection and completion of the first section of the houses to be erected on the Lewisham Park site.

*MARCH 1.—**London, N.W.**—The Metropolitan Borough of St. Pancras invite tenders for the erection of 64 flats and creche in three blocks at Prince of Wales-road, Kentish Town, N.W.

*MARCH 1.—**Westhampnett.**—The Westhampnett R.D.C. invite tenders for the erection of 18 houses near Tile Barn, Eastergate.

MARCH 2.—**Barnet.**—RECONSTRUCTION.—The U.D.C invite tenders for works of drainage, tar paving, roughcasting, erection of outbuildings, repairs to roofs, woodwork, internal and external renovation at York-terrace, Mays-lane, Barnet. Specification at the Council Offices, Wood-street, Barnet.

MARCH 2.—**Cardiff.**—PAVILION.—Designs and tenders for the erection of an open-sided concert pavilion at Roath Park for the T.C. Specification of the City Engineer, Mr. E. J. Elford, City Hall, Cardiff.

*MARCH 2.—**Malling.**—The Malling R.D.C. invite tenders for the erection of 8 cottages on site in Forstal-road, Aylesford, Kent.

*MARCH 3.—**Holland.**—The Small Holdings Committee of the Parts of Holland (Lincs) County Council invite tenders for the erection of 3 pairs semi-detached cottages, 1 detached cottage, 9 sets of farm buildings, and alterations to existing premises.

*MARCH 3.—**Sevenoaks.**—The Sevenoaks R.D.C. invite tenders for the erection of six houses at Four Elms, Edenbridge.

MARCH 5.—**Guildford.**—The Board of Guardians of the Guildford Union invite tenders for the carrying out of certain structural and decorative repairs at the buildings forming the Guardians' Institution in Warren-road, Guildford.

*MARCH 10.—**Hackney.**—The Council of the Metropolitan Borough of Hackney invite tenders for building works, being extension and completion of the Electricity Sub-Station at Northwold-road.

MARCH 10.—**Hambledon.**—The Hambledon R.D.C. invite tenders for the erection and completion of 12 houses at Bramley, 12 at Chiddingfold, 7 at Ewhurst, 12 at Witley and 2 at Wonersh.

*MARCH 10.—**Romford.**—The Romford R.D.C. invite tenders for the erection of 40 houses; 20 at Harold Wood and 20 on Upminster Common.

*MARCH 17. — **Godalming.** — The Metropolitan Asylums Board invite tenders for the erection of a Sanatorium at Highdown, near Godalming, Surrey.

NO DATE.—**Riecall.**—HOUSES.—For the erection of the following houses:—Riecall, 20 houses; Barlby, 12; Osgodby, 6; Cliffe, 6; South Duffield, 4; Scipwith, 6; North Duffield, 5; Kelfield, 4. Quantities of the Architects, Messrs. Blenkinsopp & Scatchard, Selby. Deposit £1 1s. for each contract.

NO DATE.—**Selby.**—HOUSES.—Erection of 98 houses for the R.D.C. Quantities of the Architects, Messrs. Blenkinsopp, A.R.I.B.A., & Scatchard, M.S.A., Midland Bank Chambers, Park-street, Selby. Deposit £1 1s.

*NO DATE.—**Wincanton.**—The R.D.C. invite tenders for the erection of 18 houses at Castle Cary.

FURNITURE, MATERIALS, etc.

FEBRUARY 14.—**Wetherby.**—ROAD MATERIAL.—The R.D.C. invite tenders for the supply of clean slag or dross, tarred slag, granite, limestone, and tarred limestone. Specifications from the Surveyor, Mr. A. Suttel, Council Offices, Wetherby.

FEBRUARY 14.—**Wetherby.**—TOOLS AND STORES.—The R.D.C. invite tenders for the supply of the tools and stores. Specifications from the Surveyor, Mr. A. Suttel, Council Offices, Wetherby.

FEBRUARY 15.—**Barnet.**—ROAD MATERIALS.—The U.D.C. invite tenders for the supply of tarred slag Macadam, slag and concrete chippings, broken slag, concrete flags, tar, disinfectants. Forms of tender of Mr. W. B. Chancellor, Surveyor, Municipal Offices, Barnet.

FEBRUARY 16.—**Belfast.**—STORES.—The Director of the Belfast and County Down Railway Company invite tenders for the supply of stores. Forms of tender of Mr. H. E. Mellor, secretary, Queen's Quay Terminus Belfast.

FEBRUARY 16. —**Birkenhead.** — MATERIALS. — The Corporation invite tenders for the supply of materials for the public services. Specifications of Mr. Charles Brownridge, Borough Engineer and Surveyor, Town Hall, Birkenhead.

FEBRUARY 16. — **Bucklow.** — MATERIALS. — The R.D.C. invite tenders for the supply of granite setts, broken granite, chippings, slag, cinders, grit setts, road grids, spades, shovels, road brushes, and for tar-spraying. Forms of tender from Mr. R. C. Cordon, Highway Surveyor, Knutsford.

FEBRUARY 16.—**Richmond (Surrey).**—MATERIALS.—The B.C. invite tenders for materials required in the various public services. Forms of tender of Mr. J. H. Brierley, borough surveyor, Richmond, Surrey.

FEBRUARY 16.—**Waltham Cross.**—MATERIALS.—The U.D.C. invite tenders for the supply of granite; flints, gravel, hoggin, ballast and sand; tar macadam; and for tar spraying. Forms of tender of Mr. W. C. Holloway, engineer and surveyor, Town Hall, Waltham Abbey.

FEBRUARY 17.—**Aldershot.**—The U.D.C. invites tenders for the supply of broken granite. Forms of tender of Mr. James Neave, Surveyor, Municipal Buildings, Aldershot.

FEBRUARY 17.—**Newark.**—ROAD MATERIALS.—The R.D.C. invite tenders for the supply of 500 tons of slag. Particulars of the district surveyor, Mr. R. Oakden, 27, Winehilsea-avenue, Newark.

FEBRUARY 17.—**Romford.**—ROAD MATERIAL.—The U.D.C. invite tenders for granite chippings and tar. Forms of tender from Mr. F. G. Beaumont, Surveyor, Council Offices, Romford, Essex.

FEBRUARY 19.—**Bootle.**—FENCING.—The Housing Committee invite tenders for the provision of reinforced concrete fence posts, wire, oak entrance gates, wrought iron gates, fixing of fencing, &c. Specification of the Borough Engineer, Bootle.

FEBRUARY 18. — **Longbenton.** — MATERIALS. — The U.D.C. invite tenders for the supply of road materials. Specification from Mr. William Bean, Highway Surveyor, Council Chambers, Forest Hall.

FEBRUARY 18.—**Oxford.**—MATERIALS.—The Corporation invite tenders for the supply of the undermentioned materials:—Portland cement, broken granite and slag, tarred slag and limestone, York kerb and slabs, concrete slabs and kerbs. Forms of tenders of the City Engineer, Town Hall, Oxford.

FEBRUARY 19.—**Bootle.**—PIPES.—The Housing Committee invite tenders for glazed stoneware pipes and accessories required in connection with their housing scheme. Particulars of the Borough Engineer, Bootle.

FEBRUARY 19. — **Maidstone.** — MATERIALS. — The R.D.C. invite tenders for the supply of road materials disinfectants, shovels, &c. Forms of tenders of Mr. F. Post, clerk, Council Offices, King-street, Maidstone.

FEBRUARY 19.—**Southgate.**—ROAD MATERIALS.—The U.D.C. invite tenders for road materials. Forms of tender of the Acting Surveyor, Town Hall, Palmer's Green.

FEBRUARY 20.—**London.**—STORES.—The Metropolitan Water Board invite tenders for the supply of various stores. Forms of tenders of the chief engineer, South-place, Finsbury, E.C.

FEBRUARY 20.—**Stratford-on-Avon.**—MATERIALS.—The Corporation invite tenders for the supply of road and other materials. Form of tender of Mr. F. W. Jones, Borough Surveyor, Municipal Offices, Stratford-upon-Avon.

FEBRUARY 21.—**Bedford.**—ROAD MATERIALS.—The Bedfordshire County Council invite tenders for the supply of broken granite, slag, flints, gravel. Forms of tender of the County Surveyor, Shire Hall, Bedford.

FEBRUARY 21. — **Darlington.** — MATERIALS. — The R.D.C. invite tenders for materials used in the public services, 1921. Forms of tender of the Surveyor, Union Offices, Darlington.

FEBRUARY 21.—**Earby.**—MATERIALS.—The U.D.C. invite tenders for the supply of road and other materials. Forms of tender of Mr. Jas. E. Aldersley, surveyor, Council Offices, Earby.

FEBRUARY 21.—**Glamorganshire.** — TOOLS. — Tools and ironmongers, goods for the County Council. Forms of tender of Mr. Geo. A. Phillips, County Surveyor, Glamorgan County Hall, Cardiff.

FEBRUARY 21.—**Wakefield.**—TAR.—300,000 gallons of tar for the West Riding County Council. Mr. F. G. Carpenter, County Surveyor, County Hall, Wakefield.

FEBRUARY 23.—**Harrogate.**—ROAD MATERIALS.—The Council invite tenders for the supply and delivery of road materials. Specification of Mr. C. E. Rivers, Borough Engineer, Municipal Offices, Harrogate.

FEBRUARY 23.—**Paddington.**—MATERIALS.—The B.C. invite tenders for materials required in the various public services. Forms of tender of the Borough Treasurer, Town Hall, Paddington, W. Charge 2s. 6d. per form.

FEBRUARY 23. — **Rotherham.** — MATERIALS.—The R.D.C. invite tenders for the supply of tarred Macadam, granite and slag. Specifications from Mr. R. Bradbury, District Surveyor, Imperial Buildings, Rotherham.

FEBRUARY 23. — **Walsall.** — MATERIALS. — The R.D.C. invite tenders for the supply of road and other materials. Forms of tender of Mr. W. P. Young, district surveyor, Council Offices, Daw End, Rushall, Walsall.

FEBRUARY 24.—**London.**—DESK STANDARDS.—7,160 pairs of iron desk standards of various sizes for the London County Council. Specification of the Chief Officer of Stores, L.C.C. Stores, No. 31, Clerkenwell-close, E.C. 1

FEBRUARY 24. — **Willesden.** — MATERIALS. — The U.D.C. invite tenders for the supply of road and other materials. Specifications of Mr. F. Wilkinson, Engineer to the Council, Municipal Offices, Dyne-road, Kilburn, N.W.6.

FEBRUARY 26.—**Skirlaugh.**—ROAD MATERIALS.—The R.D.C. invite tenders for road material. Forms of tender of the Surveyor, Mr. J. A. Andrews, Skirlaugh, Hull.

MARCH 2.—**Birmingham.**—MATERIALS.—The T.F. invite tenders for supply of iron and steel ware, belting, timber, brushes, drysaltery, and miscellaneous stores. Specifications of the Superintendent, Council House, Birmingham.

MARCH 3.—**Strood.**—ROAD MATERIALS.—The R.D.C. invite tenders for highway material and carting. Specifications of the District Surveyor, Mr. L. Randerson, Meopham, near Gravesend.

MARCH 4.—**Bedwas.**—STORES.—The Bedwas Navigation Colliery Co. invite tenders for their requirements in stores, &c., during the six months. Forms of tender of Mr. Griffith Morgan, Secretary, Bedwas, Mon.

MARCH 8.—**Aberdare.**—MATERIALS.—The U.D.C. invite tenders for the supply of stores to the electricity and tramway departments. Specifications of Mr. A. J. Abraham, General Manager, Aberdare, Glam.

ENGINEERING, IRON AND STEEL.

FEBRUARY 13.—**Southend-on-Sea.**—CAR SHED.—The Corporation invite tenders for the supply and erection of a tram-car shed at their London-road Depot. The structure will consist of a steel-framed shed, 155 ft. in length, by 48ft. in width. Quantities of Mr. R. H. Dyer, borough engineer, Municipal Buildings, Southend-on-Sea. Deposit, £2.

FEBRUARY 16.—**Bristol.**—PONTOON.—The Docks Committee invite tenders for the ferro-concrete reconstruction of the upper part of the Lower Pontoon, Hotwells Landing Stage, Bristol. Specification from Mr. Thomas A. Peace, Engineer, Engineer's Office, Avonmouth Docks. Deposit, £2.

FEBRUARY 16.—**Cowdenbeath.**—FILTERS.—The T.C. invite tenders for the supply of mechanical filtration plant. Particulars of the Engineers, Messrs. J. & H. Leslie & Reid, 72a, George-street, Edinburgh. Deposit £1.

FEBRUARY 17.—**Aldershot.**—SMITH'S PLANT.—The U.D.C. invite tenders for the supply of blacksmith's plant. Specifications of Mr. J. Neave, surveyor, Municipal Buildings, Aldershot.

FEBRUARY 17.—**India.**—ROAD BRIDGES.—The Secretary of State for India in Council invites tenders for road bridges, 40, 50 and 60 ft. clear span. Conditions of contract of the Director-General of Stores, India Office, Whitehall, S.W. 1

FEBRUARY 17.—**London.**—RAILWAY MATERIAL.—The Secretary of State for India in Council invites tenders for axleboxes for rolling stock. Conditions of the Director-General of Stores, India Office, Whitehall, S.W.

FEBRUARY 17.—**Wallasey.**—RAILS.—The Corporation invite tenders for about 30 tons F.B. rails of standard section, 75 lbs. per yard. Specification of the Gas and Water Engineer, Mr. J. H. Crowther, Limekiln-lane, Wallasey, Cheshire.

FEBRUARY 18.—**Adwick-le-Street.**—STEEL ROOF.—The U.D.C. invite tenders for the supplying and erecting of a steel-framed roof in two spans, about 100 ft. by 40 ft. each, in connection with the Council's Storage Reservoir. Particulars of Mr. George Gledhill, surveyor, Council Offices, Adwick-le-Street, near Doncaster. Deposit, £2.

FEBRUARY 18.—**Adwick-le-Street.**—WATER SOFTENING PLANT.—The U.D.C. invite tenders for water softening plant in connection with the new water scheme. The quantity of water to be dealt with is equal to 18,000 gallons per hour. Particulars of Mr. George Gledhill, surveyor, Council Office., Adwick-le-Street, near Doncaster.

FEBRUARY 18.—**Carlisle.**—ELECTRIC INSTALLATION.—Installation of electric light at the Tuberculosis Colony, Englethwaite, near Carlisle, for the Cumberland County Council. Specification of Mr. J. Forster, County Architect, Carlisle.

FEBRUARY 21.—**Manchester.**—PUMP.—The Corporation Water Works invite tenders for the supply and erection of an electrically-driven multi-stage centrifugal pump, &c. Specification, &c., of the Secretary, Waterworks Offices, Town Hall, Manchester.

FEBRUARY 21.—**Manchester.**—WATERWORKS PLANT.—The Waterworks Committee invite tenders for the supply and erection at Thirlmere of water turbine, dynamo, switchboard, &c., storage battery, reversible booster, motor generator, switchboard, &c., D.C. motors and cables. Specifications from the Secretary, Water Department, Town Hall, Manchester. Deposit, £2 2s.

FEBRUARY 23.—**London.**—IRON PIPES.—The London County Council invites tenders for the manufacture and delivery of about 1,340 tons of cast-iron pipes, mostly 24 in. diameter, and special castings. Quantities of the Chief Engineer, County Hall, Spring-gardens, S.W. Deposit £5.

FEBRUARY 24.—**West Ham.**—REFUSE DESTRUCTOR.—The Council invite tenders for the supply and erection of a refuse destructor and steam-raising plant, in connection with the Electricity Generating Station, Quadrant-street, Canning Town. Specification of the borough engineer, Town Hall, West Ham, E. 15. Deposit, £1.

FEBRUARY 27.—**Sundridge.**—PUMP.—The Metropolitan Water Board invite tenders for the supply and erection of a borehole pump at Sundridge, Kent. Specification at the Offices of the Board, Chief Engineer's Department, South-place, Finsbury-pavement, E.C. 2. Deposit, £1 1s.

MARCH 4.—**Johannesburgh.**—METERS.—The Municipal Council invite tenders for 1,000 ¾ in. water meters. Conditions of contract of the Council's London Agents, Messrs. E. W. Carling & Co., 8t. Dunstan's-buildings, St. Dunstan's-hill, London, E.C.3. Deposit 10s. 6d.

MARCH 4. — **Keadby.** — BRIDGE REMOVAL. — The Great Central Railway Co. invite tenders for the removal of the old bridge which formerly carried the railway over the River Trent at Keadby, Lincolnshire. Particulars of the Chief Engineer, Great Central Railway, Marylebone Station, London, N.W. 1.

NO DATE. — **Camberwell.** — HEATING, &C. — The Guardians of Camberwell invite tenders for (1) supply and fixing of two large heaters, pipes, &c.; (2) economiser; (3) three alternating current motors, 5 h.p. and 15 h.p.; (4) one fan, direct coupled to electric motor, to deliver 30,000 cub. ft. of air per minute. Specifications of Mr. Ernest Mott, Clerk, 29, Peckham-road, Camberwell, S.E. Deposit 10s. for contracts 1 and 2.

ROAD, SANITARY, AND WATER WORKS.

FEBRUARY 13.—**Dunfermline.**—WATER AND GAS MAINS.—The Town Council invite tenders for supplying and laying 6 in. and 4 in. diameter C.I. water mains, also for executing the ground work for gas mains required in connection with the laying-out of part of housing scheme at Bruecfield. Quantities of the Burgh Engineer, City-chambers, Dunfermline. Deposit, £2 2s.

FEBRUARY 14.—**Glasgow.**—SANITARY CONVENIENCE.—The Corporation invites tenders for the works required in connection with the construction of a public convenience at Portman-street, Kinning Park. Specifications at the Office of Public Works, City Chambers, 54, Cochrane-street, Glasgow.

FEBRUARY 14.—**Hertford.**—The Council invite tenders for sewer construction, roadmaking and laying of water mains at the Camp's hill, Housing Scheme.

FEBRUARY 16.—**Argyll.**—The Cowal District Committee of the County Council of Argyll invite tenders for the repairing of sea walls and causeway at Innella between Ardentinny and Blairmore, between Colintraive and Couston, Tighnabruaich. Specifications of Mr. Wm. Disseldiff, District Clerk, 160, Argyll-street, Dunoon.

FEBRUARY 16.—**Mountain Ash.**—ROAD AND SEWERS.—The U.D.C. invite tenders for Contract No. 1 of the Penrhiwceiber Housing Scheme for the construction of approximately 500 lin. yards of roadway, with sewers and surface water drains. Quantities of Mr. W. G. Thomas, Engineer and Surveyor, Town Hall, Mountain Ash. Deposit, £2 2s.

FEBRUARY 16.—**Watford.**—ROADS AND SEWERS.—The U.D.C. invite tenders for construction of roads and sewers on the Harebreeks Estate. Quantities of Mr. D. Waterhouse, Surveyor, Council Offices, High-street, Watford. Deposit £5.

FEBRUARY 17. — **Aldershot.** — CONVENIENCES. — The U.D.C. invite tenders for the erection of two public conveniences. Specifications of Mr. James Neave, Municipal Buildings, Aldershot. Deposit, £2 2s.

FEBRUARY 19.—**Houghton-le-Spring.**—ROADS, &C.—The R.D.C. invite tenders for sewer construction and road making for housing scheme at Newbottle (72 houses in all). Quantities of the Architect, Mr. J. Gibson, Cowe, Chester-le-Street, Co. Durham. Deposit £1 1s.

FEBRUARY 20.—**Godstone.**—TAR WASHING.—The R.D.C. invite tenders for tar-washing the highways in their district during 1920 with distilled tar and tarvia B composition. Forms of tender from Mr. Geo. E Crowther, Engineer and Surveyor, Council Offices, New Oxted, Surrey.

FEBRUARY 21.—**Inveraadale.**—WIDENING, &c.—Tenders are invited for widening and improving 4,900 yds. of the main road between Lochmaree and Kinlochewe. Specifications of Mr. Duncan M'Kenzie, district road surveyor, Inveraadale, Ross-shire.

FEBRUARY 23.—**Blean.**—SEWER.—1,176 yards of 9 in. stoneware pipe sewers in Whitstable-cum-Seasalter, near Whitstable for the Blean U.D.C. Quantities of Mr. F. A. Ward, Engineer, Blean Union, Herne Common, Herne. Deposit £2.

FEBRUARY 23.—**Bucklow.**—SANITARY.—The Bucklow Board of Guardians invite tenders for small sanitary alterations at the Poor Law Institution at Knutsford. Specification of Mr. George Leigh, Clerk, Union Offices, Knutsford, Cheshire.

FEBRUARY 23.—**Cheshunt.**—ROADS AND SEWERS.—The U.D.C. invite tenders for the construction of roads and sewers on the Flamstead End Housing site. Quantities of Mr. J. E. Sharpe, surveyor, Cheshunt, Herts. Deposit £2 2s.

FEBRUARY 23.—**London.**—PIPE-LAYING.—The London County Council invites tenders for laying and fixing of about 1½ miles of cast-iron socket pipes, 24 in. diameter, and works connected therewith, partly in the Borough of East Ham and partly in the Metropolitan Borough of Woolwich. Quantities of the Chief Engineer, County Hall, Spring-gardens, S.W. Deposit £5.

FEBRUARY 23.—**Port Glasgow.**—ROADS.—The T.C. invite tenders for causewaying and other work proposed to be executed in Shore-street. Forms of tender from Mr. James Murray, Burgh Surveyor, Port Glasgow.

FEBRUARY 24.—**Ilford.**—DRAIN.—The U.D.C. invite tenders for providing and laying of a surface-water drain in Cranbrook-road, Ilford, of about 217 yards of 12 in. and 300 yards of 9 in. stoneware pipes with the necessary manholes. Quantities of Mr. Herbert Shaw, Town Hall, Ilford. Deposit £2 2s.

FEBRUARY 24.—**Islington.**—ROAD TARRING.—The B.C. invite tenders for tarring about 10½ miles of roads. Specification of the Borough Engineer, Town Hall, Upper street, N. 1.

FEBRUARY 24.—**Leyton.**—SANITARY.—The U.D.C. invite tenders for the collection and removal of house refuse by the pail system from houses within their district for one year, also for watering, cartage and slopping for one year. Forms of tender of Mr. Ernest H. Essex, Surveyor, Town Hall, Leyton.

FEBRUARY 24.—**Willesden.**—JOBBING WORKS.—The U.D.C. invite tenders for the execution of jobbing works in construction of sewers &c., and for tar-paving works. Specifications of Mr. F. Wilkinson, Engineer, Municipal Offices, Kilburn, N.W.

FEBRUARY 24.—**Sefton.**—PAVING.—The R.D.C. invite tenders for the paving with Welsh granite setts portions of the following highways within their area: Aintree-lane, Aintree; Buckley-hill, Brickwall-lane Edge-lane, Netherton-lane and Lydiate-lane, Sefton: Alders Bridge, Delf-lane, Littlebrook-lane, Gloversbrow and Mill-brow, Kirkby. Specifications of the Surveyor, Mr. F. Pool, 21, Evered-avenue, Rice-lane, Walton, Liverpool.

FEBRUARY 25.—**Ashford.**—SEWER.—Laying of about 132 ft. 6 in. pipe sewer, with manholes, at Hemsted-terrace, Godinton-road, for the Ashford U.D.C. Specification of Mr. Wm. Terrill, Surveyor, 5, North-street, Ashford, Kent.

FEBRUARY 26.—**Midsomer Norton.**—ROADS AND SEWERS.—Street and sewerage works on sites at Clandown, West-road, Welton, and Clapton-lane, Midsomer Norton, for the U.D.C. Quantities at the Council Offices, Midsomer Norton. Deposit £2 2s.

FEBRUARY 27.—**Cowdenbeath.**—WATER WORKS.—The T.C. invite tenders for cutting tracks for and laying and jointing about a mile of 12 and 8 in. iron pipes; constructing service tank at Craigbeath-hill; erecting filter house near Cantsdam bridge, &c. Schedule of the Engineers, Messrs. J. & A. Leslie & Reid, C.E., 72A, George-street, Edinburgh. Deposit £1.

FEBRUARY 27.—**Manchester.**—WATER TANK.—The Guardians of the Manchester Union invite tenders for the construction of a reinforced concrete water storage tank, at their Colony for Epileptics, Langho, near Blackburn. Plan of Mr. F. H. Overmann, F.M.S.A., 49, Deansgate, Manchester. Deposit £3 3s.

MARCH 1.—**Upton-on-Severn.**—WATERWORKS.—The R.D.C. invite tenders for the provision, laying and jointing of about four-and-a-half miles of 5 in., 4 in., and 3 in. cast-iron water mains, and construction of engine house, head well, reservoir, &c. Quantities of the engineers, Messrs. Wilcox & Raikes, Union Chambers, 63, Temple-row, Birmingham. Deposit £5 5s.

MARCH 3.—**Chester-le-Street.**—LAYING OF MAINS.—U.D.C. invite tenders for the provision and laying of underground mains and all necessary equipment for the lighting of their district by electricity. Specifications of Mr. Fredk. J. Gray, Clerk, Council Offices, Chester-le-Street. Deposit £1 1s.

✱MARCH 5.—**Hertford.**—The Hertford R.D.C. invite tenders for the execution of works in connection with Bramfield Water Supply.

NO DATE.—**Warmley.**—LAY-OUT.—The R.D.C. invite tenders for the layout of Soundwell housing site. Quantities of Mr. John Bevan, architect, 36, Corn-street, Bristol.

Auction Sales, Tenders, &c.

FEBRUARY 17, 18, 19 and 20.—**Bognor.**—Messrs. Hall, Pain & Goldsmith will sell, at the Norman, Thompson Flight Aerodrome, Middleton, Bognor-Sussex, the freehold factory or building site of about 7½ acres, wood and iron buildings, equipment, machinery, plant and stock-in-trade.

✱FEBRUARY 18.—**Berkhampstead.**—Mr. J. D. H. Cousins will sell quantity of timber and building materials, joists and girders.

FEBRUARY 18.—**London, E.C.**—Messrs. Hamilton, Palmer & Co., Ltd., will sell, by order of the Disposal Board, at the Charterhouse Military Hospital, Charterhouse-square, London, E.C., hospital furniture and canteen equipment.

FEBRUARY 23, 24, AND 25.—**Tadworth, Surrey.**—Messrs. Chas. Osenton & Co. will sell by direction of the Disposal Board at the Camp, Tadworth, Surrey, army stores in various lots.

✱FEBRUARY 24.—**London, S.E.**—Messrs. Henry Butcher & Co. will sell, by Order of the Navy and Army Canteen Board, at the Building Works Depot, 107, Snowfields, Bermondsey, S.E., valuable building materials and plant, timber, &c.

✱FEBRUARY 24.—**London, W.**—Messrs. Knight, Frank & Rutley will sell, by direction of the Right Hon. The Earl of Northbrook, G.C.S.I., at Hanover-square Estate Room, the highly important freehold building estate at Lewisham.

FEBRUARY 25.—**Tottenham, N.**—Messrs. Henry Butcher & Co., will sell at Finsbury Cabinet Works, Tottenham, N., extensive surplus aircraft stores, material, plant and machinery.

✱FEBRUARY 25 AND 26.—**London.**—Messrs. J. Skelding & Co. will sell on the premises, 66, Tower Bridge road, S.E., woodworking plant and machinery, also builders stock and plant.

✱FEBRUARY 26.—**Bridlington.**—Messrs. Knight, Frank & Rutley will sell at the Constitutional Club, Huntriss-row, Scarborough, the freehold property known as "North Cliff House."

FEBRUARY 26.—**London, W.**—Messrs. Knight Frank & Rutley will sell, in the Hanover Estate Room, the historical and valuable site of Old Cheyne House.

✱FEBRUARY 28.—**Grantham.**—Messrs. Excritt & Berrell will sell at the Estate Sale Rooms, Elmer House, Grantham, the world-renowned Ancaster stone quarry.

FEBRUARY.—**Cosham.**—Messrs. Bowler & Blake will sell by direction of the Disposal Board, 50 huts at Fort Widley and Fort Purbrook, Portsdown Hill, Cosham, near Portsmouth.

MARCH.—**London, E.C. 4.**—Messrs. Dann & Lucas will sell, at the Cannon-street Hotel, E.C. 4, the freehold residential and agricultural estate known as "Farningham Hill."

VARIOUS DATES.—**London and District.**—Messrs. Green & Son will sell, by direction of the Disposal Board, Ministry of Munitions, huts and contents, at various searchlight and gun stations.

Competitions.

(See Competition News, page 187.)

Public Appointments.

FEBRUARY 13.—**East Barnet Valley.**—The U.D.C. invite applications for the appointment of Clerk of Works. Salary, £6 6s. per week.

FEBRUARY 13.—**Ashwell.**—The Council require the services of a whole-time Clerk of Works to supervise the erection of 50 houses.

FEBRUARY 13.—**Paddington.**—The Metropolitan Borough of Paddington invite applications for the appointment of two Architectural Assistants. A senior, salary £300 per annum; junior, salary £200 per annum.

FEBRUARY 14.—**East Ham.**—The County Borough of East Ham invite applications for the services of a Prime Cost and Estimating Clerk in the borough engineer's department. Salary £150 per annum, plus the current war bonus of £90.

FEBRUARY 14.—**London, N.**—The L.C.C. require resident qualified Manual Training Instructor at Highbury Industrial School for Boys, Highbury-grove.

FEBRUARY 16.—**Bristol.**—The Sanitary and Improvement Committee of the Corporation of Bristol invite applications for the position of Engineering Draughtsman in the City Engineer's Department.

FEBRUARY 16.—**London, E.**—The Barking U.D.C. invite applications for the appointment of building inspectors and works superintendent at a salary of £360 per annum inclusive.

FEBRUARY 16.—**Newport.**—The Corporation of Newport invite applications for the position of Technical Assistant. Commencing salary, £200 per annum.

FEBRUARY 17.—**Epsom.**—The Epsom U.D.C. invite applications for the post of Clerk of Works for their housing scheme. Salary £7 a week, inclusive of War Bonus.

✱FEBRUARY 17.—**Romford.**—The Romford R.D.C. invite applications for the position of Clerk of Works for the Council's Housing Scheme.

✱FEBRUARY 17.—The Ministry of Agriculture and Fisheries invite applications for the appointment of a temporary Quantity Surveyor. Salary £450 per annum; also a temporary Quantity Surveyor's Assistant. Salary £300 per annum.

FEBRUARY 18.—**Southampton.**—The County of Southampton invite applications for the posts of a qualified Architectural Draughtsman (temporary). Salary, at the rate of £250 per annum, including war bonus. Also an Accountant and Junior Quantity Surveyor (temporary. Salary, at the rate of £156 per annum, including war bonus. Ex-service men preferred.

✱FEBRUARY 20.—**Stowmarket.**—The Stowmarket U.D.C. invite applications for the services of a Clerk of Works. Duration of work, 12 months, with possible extension.

✱FEBRUARY 21.—**Bosmere and Claydon.**—The Bosmere and Claydon R.D.C. invite applications for the services of a competent Clerk of Works. Salary £5 per week.

FEBRUARY 21.—**London, N.**—The Middlesex Education Committee invite applications for the post of Headmaster of the Tottenham Trade School for Girls.

✱FEBRUARY 21.—**Margate.**—The Borough of Margate invite applications for the appointment of Temporary Quantity Surveying Assistant. Salary £250 per annum.

✱FEBRUARY 25.—**Manchester.**—The Housing Committee of the city of Manchester invite applications for the temporary appointment of a housing director. Salary (inclusive of War Bonus) £1,250 per annum.

MARCH 3.—**Poplar, E.**—The Guardians of the Parish of Poplar Borough invite tenders for the erection of four cottages at the Poplar Farm Colony, Laindon, Essex.

✱NO DATE.—**Hackney.**—The London County Council invite applications for the post of a visiting Teacher of Quantity Surveying at the L.C.C. Hackney Institute, Dalston-lane, E., for not more than two evenings a week.

The R.I.B.A. Kalendar.

The *Kalendar* of the Royal Institute of British Architects, publication of which was suspended in 1916, has made a welcome re-appearance. The *Kalendar* has been brought up-to-date for the Session 1919–20, but owing to the heavy cost of production, some of the familiar features have been curtailed or omitted. The section giving the local distribution of members has been dropped out of this issue, but will, however, be restored in future issues in a modified form. The section relating to Architectural Education, Advice to Students, the Royal Institute Examinations, &c., have also been omitted, but it is hoped to issue these shortly in the form of a handbook.

PATENTS.

APPLICATIONS PUBLISHED.*

136,877.—H. E. Gilford: Construction of walls suitable for any type of building.

136,878.—J. Petter and P. F. Warren: Construction of furniture.

136,885.—J. Smith and W. Smith & Co.: Washing-boilers or coppers for domestic purposes.

123,992.—I. N. S. Frydenland: Production of porous building and insulating bodies of "Moler" (Kieselguhr diatomaceous earth).

125,073.—G. Robergel: Manufacture of bolts.

136,997.—G. Bennet: Tubular framework of school furniture.

137,013.—P. Metzko: Fences.

131,282.—A. Andreani: Barrel locks.

136,725.—F. B. Smith: Hollow or cavity concrete blocks or slabs.

136,736.—R. Hanson and W. Boothman: Domestifc fire-grates.

136,742.—C. C. Millard, R. A. Robertson and C. J. Cooper: Building brick or block, and method of manufacturing same.

137,226.—A. Mackenzie (Aktiebolaget Termit-Beton and L. Ljungberg): Floors and roofs of concrete plates.

131,916.—M. Arosio: Process for strengthening and protecting wooden materials and wooden goods.

137,267.—J. Gill: Ventilators for buildings, Ships, and other places.

137,351.—R. Fletcher and H. Fletcher: Roofing.

137,376.—T. W. Taylor: Device or appliance for use in securing stales and handles in wooden sockets.

137,384.—H. T. Shakespeare: Runners or casters.

137,393.—T. O. Mein and W. J. Cook: Appliance for splitting or chopping wood.

137,394.—A. S. Capdevila: Safety locks.

137,415.—P. Yorke and Standard Building Construction Co.: Construction of silos.

137,423.—F. J. J. Gibbons: Sliding windows.

137,440.—S. Brooks: Steam boilers and flue walls thereof.

137,475.—W. E. Wright: Paints for use in undercoats.

137,488.—J. Brodmann: Hot-air baths.

137,506.—T. Jamieson: Revolving cowls for chimneys and ventilating shafts.

* All these applications are now in the stage in which opposition to the grant of Patents upon them may be made.

PRICES CURRENT OF MATERIALS *

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry. Since our last issue several prices have been revised.—Ed.]

BRICKS, &c.

	£ s. d.
Per 1,000 Alongside, in River Thames up to London Bridge	4 10 0
Best Stocks	

Per 1000, Delivered at London Goods Stations.

	£ s. d.		£ s. d.
Flettons	3 2 6	Best Blue Pressed Staffordshire	9 11 0
Best Stourbridge Fire bricks	11 10 0	Do. Bullnose	9 13 6
		Blue Wire Cuts	7 18 6

GLAZED BRICKS—

Best White, Ivory, and Salt Glazed Stretchers	24 0 0	D'ble Str'tch'rs	31 10 0
		D'ble Headers	28 10 0
		One Side and One Ends	32 10 0
Headers	23 10 0	Two Sides and one End	33 10 0
Quoins, Bullnose and 4½in. Plain	29 10 0	Splays and Squints	31 5 0

Second Quality, £1 per 1,000 less than best. Cream and buff, £2 extra over white. Other colours, Hard Glaze, £5 10s. extra over white.

	s. d.	
Thames Ballast	19 6	per yard. delivered
Pit Sand	23 6	
Thames Sand	25 6	" " 2 miles
Best Washed Sand	24 6	" " radius
1 in. Shingle for Ferro-Concrete	23 6	" " Paddington.
1 in. " "	24 6	" " "

Per ton, delivered in London area.

	£ s. d.		£ s. d.
Best Portland Cement	3 18 6	..	4 4 0

7½/6 alongside at Vauxhall in 80-ton lots.

Vetrocrete per ton extra on above	5 0
Best Ground Blue Lias Lime	2 16 0 at rly. depot.

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks. The sacks are charged at 2s. 6d. each and credited at 2s. each if returned in good condition within three months.

Grey Stone Lime ..... 61s. 0d. per ton delivered.
Stourbridge Fireclay in s'cks 43s. 6d. per ton at rly. dpt.

STONE.

	s. d.
BATH STONE—delivered in railway trucks at Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R., per ft. cube	2 0
Do. do. delivered in railway trucks at Nine Elms, L. & S.W.R., per ft. cube	2 1½
Do. do. delivered on road waggons at Nine Elms Depot	2 2½
PORTLAND STONE—	
Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, L.& S.W.R., South Lambeth Station, G.W.R., and Mileage Station G.W.R., per ft. cube	4 3
Do. do. delivered on road waggons at above stations, per ft. cube	4 4

White basebed, 3d. per ft. cube extra.

NOTE.—½d. ft. cube extra for every foot over 20 ft. average.

YORK STONE, BLUE—*Robin Hood Quality.*

	s. d
Delivered at any Goods Station London.	
Scappled random blocks ..... Per Ft. Cube	11 9
6 in. sawn two sides landings to sizes (under 30 ft. super.) ..... Per Ft. Super	8 1½
6 in. rubbed two sides, ditto ..... "	9 1½
9 in. sawn two sides slabs (random sizes) "	3 7½
2 in. to 2½ in. sawn one side slabs (random sizes) ..... "	2 2
1½ in. to 2 in. ditto, ditto ..... "	1 10

HARD YORK—

Delivered at any Goods Station London.	
Scappled random blocks ..... Per Ft. Cube	8 9
6 in. sawn two sides landing to sizes (under 40ft. super.) ..... Per Ft. Super	7 0
6 in. rubbed two sides ditto ..... "	8 3
6 in. sawn two sides slabs (random sizes) "	3 3
9 in. ditto, ditto "	4 4
2 in. self-faced random flags .. Per Yard Super	10 6

WOOD.

GOOD BUILDING DEAL.

Inches	£ s.	
6 × 11	60 0	per standard
6 × 9	48 0	"
4 × 8	42 10	"
4 × 7	42 10	"
3 × 8	41 10	"
3 × 7	41 0	"
2½ × 7	41 0	"
3 × 6	40 10	"
3 × 11	57 0	"
2 × 11	57 0	"
3 × 9	46 0	"
3 × 9	48 10	"
3 × 4½	40 0	"
3 × 4	40 0	"

PLANED BOARDS.

1 × 11	65 0	"
1 × 9	50 0	"

PLAIN EDGE FLOORING.

Inches	
½	32/- square
⅝	38/- "
¾	44/- "
⅞	55/- "
1	65/- "

TONGUED AND GROOVED FLOORING.

Inches	
½	45/6 square
⅝	56/6 "
¾	66/3 "

WOOD (*Continued*).

MATCHINGS (BEST).

Inches	
½	34/- square
⅝	40/- "
¾	54/- "

BATTENS.

Inches	£ s.	
¾ × 2	39 10	per standard

SAWN LATHS.

Per bundle	0	5	0		
Dry Wainscot Oak, per ft. super, as inch	0	2	6	to	0 3 0
½ in. do. do.	0	2	0	to	0 2 6
Dry Mahogany—Honduras, Tabasco, African, per ft. super, as inch	0	2	6	to	0 3 0
Cuba, Mahogany	0	3	6	to	0 4 0
Teak (Rangoon, Monimein or Java), per load	60	0	0	to	85 0 0
American Whitewood planks, per ft. cube	0	18	0	to	1 0 0
Scotch Glue, per cwt.	5	5	0	..	—
Liquid Glue, per gallon	0	17	0	..	—

SLATES.

1st quality slates from Bangor or Portmadoc in truck load delivered London area. Per 1,000 of 1,200.

		£ s. d.
Best Blue Bangor Slates,	24 by 12	55 0 0
" "	22 by 12	44 7 6
First quality " "	22 by 11	40 15 0
" "	20 by 12	40 7 6
Best Blue Portmadoc	20 by 10	35 0 0
" "	18 by 10	27 17 6
First quality "	18 by 9	22 15 0
" "	16 by 10	21 10 0
" "	16 by 8	16 17 6

TILES.

	Per 1,000 f.o.r. London. £ s. d.
Best machine-made tiles from Broseley or Staffordshire district	6 15 0
Ditto hand-made ditto	7 0 0
Ornamental ditto	7 2 6
Hip and valley tiles (per dozen)	0 15 0

METALS.

JOISTS, GIRDERS, &c., TO LONDON STATION PER TON—

	s. d.
R. S. Joists, cut and fitted	29 0 0
Plain Compound Girders	31 0 0
" Stancheons	33 0 0
In Roof Work	38 0 0

WROUGHT-IRON TUBES AND FITTINGS—
(Discount off List for lot of not less than £10 net value delivered direct from works. 5 per cent. less carriage forward if sent from London stocks.)

	Sizes up to and including 2 in. Tubes.	Fittings.	Sizes 2½ in. to 6 in. Tubes.	Fittings.
Gas	10	12½	12½	25
Water	1½	7½	5	22½
Steam	+8½	—2½	+3½	—3½
Galvanised Gas	+15	—2½	+12½	—15
" Water	+26½	+2½	+22½	—12½
" Steam	+37½	+7½	+32½	—10

L.C.C. COATED SOIL PIPES—London Prices ex works.

	Pipe. s. d	Bends, stock angles. s. d.	Branches, stock angl s. d.
2 in. per yd. in 6 fts.	5 6	4 0	4 10
2½ in. " "	6 8	4 5	6 0
3 in. " "	8 1	4 10	7 3
3½ in. " "	9 0	6 0	8 5
4 in. " "	9 6	6 10	9 8

RAIN-WATER PIPES, &c.

	Pipe. s. d.	Bends, stock angles. s. d.	Branches, stock angles. s. d.
2 in. per yd. in 6fts. plain	4 0	2 3	3 0
2½ in. " "	4 6	2 8	3 8
3 in. " "	5 6	3 3	4 10
3½ in. " "	6 6	3 10	5 8
4 in. " "	6 9	4 8	6 10

L.C.C. DRAIN PIPES.—9 ft. lengths. London Prices. 4 in., 12s. .. 5 in., 15s. .. 6 in., 18s.

Per ton in London.

	£ s. d.		£ s. d.
IRON—			
Common Bars	28 0 0	to	29 0 0
Staffordshire Crown Bars—good merchant quality	29 0 0	..	30 0 0
Staffordshire "Marked Bars"	31 10 0	..	32 10 0
Mild Steel Bars	28 0 0	..	30 0 0
Steel Bars. Ferro-Concrete quality, basis price	28 0 0	..	30 0 0
Hoop Iron, basis price	32 0 0	..	34 10 0
" " Galvanised	50 0 0	..	54 0 0
Sheet Iron Black—			
Ordinary sizes to 20 g.	39 0 0	..	40 0 0
" " 24 g.	40 0 0	..	41 0 0
" " 26 g.	42 0 0	..	43 0 0
Sheet Iron, Galvanised flat, ordinary quality—			
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	50 0 0	..	52 0 0
Ordinary sizes to 22 g. and 24 g.	51 0 0	..	52 0 0
Ordinary sizes to 26 g.	51 0 0	..	54 0 0
Ordinary sizes to 20 g.	50 0 0	..	52 0 0
" " 22 g. and 24 g.	51 0 0	..	52 0 0
Ordinary sizes to 26 g.	53 0 0	..	54 0 0

METALS (*Continued*).

Per ton in London.

	£ s. d.		£ s. d.
Galvanised Corrugated Sheets—			
Ordinary sizes, 6 ft. to 8 ft. 20 g.	50 0 0	..	52 0 0
Ordinary sizes, 22 g. and 24 g.	51 0 0	..	52 0 0
Ordinary sizes, 26 g.	53 0 0	..	54 0 0
Sheet Iron, Galvanised, flat, best quality—			
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	52 0 0	..	53 0 0
Best Soft Steel Sheets, 22 g. and 24 g.	53 0 0	..	54 0 0
Best Soft Steel Sheets, 26 g.	54 10 0	..	55 10 0
Cut Nails, 3 in. to 6 in.	37 10 0	..	38 10 0

(Under 3 in. usual trade extras.)

LEAD, &c.

Delivered in London.

	£ s. d.		£ s. d.
LEAD Sheet, English, 4 lb. and up	61 10 0	..	—
Pipe in coils	62 0 0	..	—
Soil Pipe	64 10 0	..	—
Compo pipe	65 0 0	..	—

NOTE—Country delivery, 30s. per ton extra; lots under 5 cwt., 1s. 6d. per cwt. extra. Cut to sizes, 2s. cwt. extra.

Old lead, ex London area, at Mills ..... per ton	41 10 0	..	—
Do., ex country, carriage forward ..... per ton	42 10 0	..	—

COPPER—			
Strong Sheet .... per lb.	0 2 3	..	—
Thin " .... "	0 2 4	..	—
Copper nails .... "	0 2 3	..	—
Copper wire .... "	0 2 4	..	—
TIN—English Ingots "	0 3 9	..	—
SOLDER—Plumbers' "	0 1 9	..	—
Tinmen's "	0 2 5	..	—
Blowpipe "	0 2 10	..	—

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES AND IN SQUARES IN ORDINARY SIZES.

	Per Ft.		Per Ft.
15 oz. fourths	7½d.	32 oz. fourths	10½d.
" thirds	8d.	" thirds	11½d.
21 " fourths	8½d.	Fluted, Obscured and Enamelled Sheet,	
" thirds	8¾d.	15 oz.	9½d.
26 " fourths	9½d.	21 "	11½d.
" thirds	10½d.		

Extra price according to size and substance for squares cut from stock.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

	Per Ft.
¼ Rolled plate	5½d.
⅜ Rough rolled and rough cast plate	6½d.
½ Rough rolled and rough cast plate	6½d.
Figured Rolled, Oxford Rolled, Baltic, Oceanic, Arctic, Stippolyte, and small and large Flemish white	6½d.
Ditto, tinted	8½d.
Rolled Sheet	6d.
White Rolled Cathedral	6d.
Tinted do.	8d.

PAINTS, &c.

		£ s. d.
Raw Linseed Oil in pipes ..... per gallon		0 10 10
" " " in barrels .... "		0 11 1
" " " in drums .... "		0 11 3
Boiled " " in barrels .... "		0 11 7
" " " in drums .... "		0 11 9
Turpentine in barrels .... "		0 17 8
" in drums (10 gall.) .. "		0 18 2
Genuine Ground English White Lead, per ton (In not less than 5 cwt. casks.)		88 0 0

GENUINE WHITE LEAD PAINT—
"Nine Elms," "Park," "Supremus," and other best brands (in 14 lb. tins) not less than 5 cwt. lots .. per ton delivered 120 5 0

Red Lead, Dry (packages extra) ..	per ton	71	0 0
Best Linseed Oil Putty	per cwt.	1	11 3
Filocol	per cwt.	0	16 6
Size. X D Quality	fkn.	0	6 0

VARNISHES, &c.

	Per gallon. £ s. d.
Oak Varnish ..... Outside	0 16 0
Fine ditto ..... ditto	1 0 0
Fine Copal ..... ditto	1 1 0
Pale Copal ..... ditto	1 2 6
Pale Copal Carriage ..... ditto	1 4 0
Best ditto ..... ditto	1 14 0
Floor Varnish ..... Inside	0 19 0
Fine Pale Paper ..... ditto	0 18 0
Fine Copal Cabinet ..... ditto	1 2 6
Fine Copal flatting ..... ditto	1 0 6
Hard drying Oak ..... ditto	0 18 0
Fine Hard drying Oak ..... ditto	0 19 0
Fine Copal Varnish ..... ditto	1 0 6
Pale ditto ..... ditto	1 2 6
Best ditto ..... ditto	1 14 6
Best Japan Gold Size	0 16 0
Best Black Japan	0 19 0
Oak and Mahogany Stain (water)	0 10 0
Brunswick Black	0 11 0
Berlin Black	0 16 0
Knotting (patent)	1 18 6
French and Brush Polish	1 11 0
Liquid Dryers in Terebine	0 19 0
Cuirass Black Enamel	0 7 0

* The information given on this page has been specially compiled for THE BUILDER and is copyright. Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

PROPOSED NEW BUILDINGS AND OTHER WORKS.*

In these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works, at the time of publication, have been actually commenced. Abbreviations.—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C. for Rural District Council; E.C. for Education Committee; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

ABERDEEN.—Plans passed by T.C.: Underground petrol store, Berryden-road, for William Hay & Sons, aerated water manufacturers; petrol store, Diamond-lane, for J. M. Kemp; fish-curing premises, South Esplanade East, for the Scottish Salmon and White Fish Co., Ltd.; additions, Poynernook-road, for the Aberdeen Steam Trawling and Fishing Co., Ltd.; additions to Burnside House, Westburn-road, for the Corporation (Public Health Department); two cottages, Ashley-gardens, for R. & J. Reid; garage, 315, King-street, for J. Milne; stable and shed, for W. R. Bruce; alterations, College-street, for the Corporation (City Improvements Department).

BARNSLEY.—The Licensing Justices have approved alterations to the following: "Cross Keys" Hotel, "Grey Horse" Inn, "Queen's" Hotel (10 additional bedrooms), and "Union" Inn; and in regard to the beerhouses, "Stores" inn and "White Sheaf" Hotel.

BOLTON.—Plans passed: Messrs. T. Ryder & Sons, extensions, Turner Bridge Works; engine shed, Fair-street, for Mr. Z. Smith; garage, Chorley Old-road, for Mr. W. Openshaw; house, Mellor-grove, for Mr. W. S. Kay; Messrs. J. Maude & Co., store shed, &c., back Deane-road; Mr. Tognarelli, garage, &c., Manchester-road; Messrs. J. Sharman & Sons, bakehouse, 33, Halliwell-road; Messrs. Alfred Bishop & Co., crossing, Hanover-street; Messrs. Bennett & Co., hay and straw store, off Moor-lane; "Shell" Marketing Co., Ltd., office, &c., Bridgeman-street; Messrs. Holdsworth Bros., store and loading way, Kay-street and Haigh-street; Messrs. Knowles, Ltd., addition to mill, Vernon-street; Messrs. William Walker & Son, warehouse, Nelson-street; Messrs. Knowles, Ltd., hoist towers, &c., Peel Mill. Waterloo-street; Messrs. Magee, Marshall & Co., cellar, 28, St. Helens-road; Mr. A. R. Batten, garage and store shed, back Fleet-street; Mr. R. E. Smith, store shed, off Edgar-street; Messrs. Whitakers', Ltd., for alteration to premises, Old Hall-street North; Croal Spinning Co., garage and pump house, Blackshaw-lane.

BRAINTREE.—Plans for the erection of six dwelling-houses on the Newtown estate, by Mr. G. Hunnable, have been passed by the U.D.C.

BRIGHTON.—The Licensing Justices have granted Sir Oswald Stoll a full license for premises to be constructed in West-street. The scheme, estimated to cost £600,000, will include, it was stated, a concert theatre, music-hall, winter garden, and a restaurant.

BUXTON.—The Ministry of Health has held an inquiry into an application by the Corporation for authority to spend £15,000 on the reconstruction of the Natural Baths.

CANTERBURY.—A project is on foot, in which Mr. W. R. Pierce, of St. Dunstan's nurseries, has taken considerable interest (with others) to provide a "garden city" scheme, to be carried through by private enterprise.

CHELTENHAM.—Plans passed by T.C.: Additions, 189, High-street, for Boots, Ltd.; additions, 2, Queen's road, for Mr. H. H. Davidson; motor house, Sudeley Villa, for Mr. E. J. Simmonds.

CLAYTON.—The Housing Commissioner has approved of the plans for the lay-out of the whole central housing estate, and has also approved of the tender for sewering and road-making amounting to £2,964 1s. 6d.

CROYDON.—The E.C. proposes to provide (1) two new public elementary schools for about 1,200 children at Lodge-road, West Croydon, and 40 children at Burdett-road, Selhurst, respectively; and (2) two new day central and continuation schools for 200 children each at the Central Polytechnic, Scarbrook-road, Croydon, and at the Branch Polytechnic, Selhurst-road, South Norwood.

DALTON-IN-FURNESS.—The Lancashire E.C. has decided to erect a new central school.

FLEETWOOD.—A site of ten acres is to be purchased for the Fleetwood Estate, Ltd., on which to erect a secondary school.

GRANTHAM.—Plans passed by T.C.: Garage, London-road, for Messrs. Burton & Burton; white metal shop, Boughton-road, for Messrs. Ruston & Hornsby; alterations, 4 and 5, St. Peters-hill, for Mr. T. Norton.

HAMMERSMITH.—Drainage plans passed by B.C.: At 22, Leyafield-road, for Mr. H. W. Howard; 245, Latimer-road, for Mr. H. Field; 3, Becklow-road, for Mr. G. R. Wood; 10, Wood-lane, for Mr. P. C. Rice; Queen's Park Rangers' Football Ground, Ellerslie-road, for Mr. H. M. Newlyn; 12, Lena-gardens, for Messrs. Chudleigh Bros.; 47, Westwick-gardens, for Mr. G. E. Coleman; 131, Latimer-road, for Mr. H. Turner; 31, Lefroy-road, for Mr. N. D. Pannell; Bute House, Brook-green, for Mr. Witham & Co.

HULL.—The Works Committee of the Corporation suggest the building of a big dry dock on land known as the Western Reservation. The engineer estimates that the scheme will cost £900,000.

KENT.—The Higher Education Committee of the Kent C.C. has decided that work shall be put in hand, when possible, in respect of six new secondary schools, namely, Beckenham County school for boys and school of art, additional temporary accommodation, £5,500; Dartford County School for Girls, additional accommodation, £7,700; Sevenoaks Grammar school, new building, £21,500; Sheerness, new County School for Girls, £18,150; Borden Grammar School, new building and site, £16,000; Tunbridge Wells County Schools for Girls, additional accommodation, £14,360.

MANCHESTER.—The following plans have been passed: Timber store to works, Cycle-street, Clayton; alterations to premises, 88 to 92, Cross-street, John Dalton-street, and Four Yards; garage to brewery, Princess-street and Midland-street, Ardwick; alterations to premises, Houldsworth-street and Little Lever-street; alterations to works, Abbey Hey-lane and Jackson-street, Gorton; laboratory and office to works, Clayton-lane, Clayton; boiler house to works, Park-street, Ardwick; alterations to premises, 12, Tib-lane; garage to works, Crabtree-lane, Clayton; addition to warehouse, Cumberland-street, Dolefield, and back Irwell-street; garage in rear of 107, Fairfield-street; addition to brewery, Fairfield-street and William-street, Ardwick; picture hall, Higher Ardwick and Dolphin-street, Ardwick; additions to works, Heath-street, Newton Heath; addition to 44, Heywood-street, Cheetham; alteration to provision warehouse, Victoria Station approach; offices to works, Broughton-lane, Cheetham; time office of works, Waterloo-street, Crumpsall; dairy off Elizabeth-street, Waterloo-road, Cheetham; factory, Dantzic-street and Beswick-row; additions to Car sheds, Queen's-road and Boyle-street, Cheetham; works, Derby-street, and Torah-street, Cheetham; waterproof garment factory, Waterloo-road and Barrow Hill-road, Cheetham; alterations and additions to Central Still house, Crumpsall Vale, Crumpsall; picture hall, Bute-street, and Broderick-street, Moston; canteen and commercial garage, Irlam-street, Newton Heath; additions to clothing factory, Dean-lane and Bowen-street, Newton Heath; conversion of outbuildings at "Fairfield House" into dwelling house, Daisy Bank-road, Rusholme; additions to works off Stockport-road, West Gorton; addition to premises, Grosvenor-street and York-street, Chorlton-upon-Medlock; showroom and garage, Oxford-road and High-street, Chorlton-upon-Medlock; stable and addition to dwelling house, Rosamond-street, East Chorlton-upon-Medlock; garage to dwelling house, "High Elms," Upper Park-road, Rusholme; addition to works, Stockport-road, West Gorton; additions to hospital, "Cringle Hall," Slade-lane, Rusholme; dwelling house, College-road, Whalley Range; stable to house, Barlow Moor-road, and Oaker-avenue, West Didsbury; store to premises, 66, Oxford-road and Angle-street, Chorlton-upon-Medlock; addition to offices, Burton-road, Withington; dwelling house and garage, Buckingham-road, Chorlton-cum-Hardy; shop and house and store, Wilbraham-road, Chorlton-cum-Hardy; house and garage, Daresbury-road, Chorlton-cum-Hardy; offices and additions to mineral water factory, Bristol-street and Mytton-street, Hulme; conversion of houses into garage and workroom, Broad-street, Lord-street, Hulme; extensions to car sheds, Princess-road and Bowes-street, Withington; dwelling house, Barlow Moor-road, Chorlton-cum-Hardy; motor house, 4, Fairlawn-street, Chorlton-upon-Medlock; shop front, 12, Bold-street, Moss Side; drains to sub-basement, Royal Exchange Extension, St. Ann's-square and Cross-street; petrol store to works, Great Bridgewater-street and Trafford-street; drying room to works, Chatham-street and Clayton-lane, Clayton; addition to commercial garage, Garden-street, Ardwick; garage, Lloyd-street and Jackson's-row; addition to works, 47, Rylance-street, Ardwick; additions to premises, 11 and 13, Great John-street; alterations to store of works, Crabtree-lane, Clayton; alterations and additions to warehouse, Commercial-street, Knott Mill; tyre fitting works, Atkinson-street and Little Quay-street; additions to warehouse, Roseberry-street and Johnson-street, Gorton; garage, Matthews-street, Ardwick; test house to works, Wilson-street, Bradford; conversion of the "Portico Library," into bank, Mosley-street and Charlotte-street; workshop to works, Bennett-street, Ardwick; alterations to warehouse, Portland-street, York-street, and Velvet-street; additions to warehouse, Gartside-street and Back Water-street; drains of lodge to Convent of Good Shepherd, opposite Chain-road, Blackley; timber-drying kiln, Pickford-street, Ancoats; drains, Oleum Stores, Delaunay's-road, Crumpsall; conveniences to works, Brook-street, Green-lane, and Wood-street, Chorlton-upon-Medlock; addition to bakery, York-street and Sidney-street, Chorlton-upon-Medlock; motor garage, Matthews-lane, Gorton; shop front, 231, Stockport road, West Gorton; addition to house, 19, Parkfield-road, Withington; addition to works, Chapel-street, Levenshulme; two houses, Darley-avenue and Broxton-road, West Didsbury; one house, Darley-avenue, West Didsbury; rubber works, River-street and Newcastle-street, Hulme.

MOTHERWELL.—The Dean of Guild Court has passed plans for the erection at the County Hospital of a cubicle pavilion giving accommodation for 20 cubicles. The cost is estimated at £5,000.

PLYMOUTH.—Plans passed by T.C.: New Victoria Brewery Co., Ltd., additions to "Pennycomequick" Hotel, Cemetery-road, Plymouth; Mr. H. Jelly, rebuilding cottage at King's Tamerton; Mr. J. Mumford, new roofs and loft, Hoe Mews, Plymouth; Mr. Ambrose Andrews, dwelling-house and garage, Thornhill Villas, Tavistock-road, Plymouth; Mr. F. Wise, laboratory and greenhouse, 62, Beaumount-road, Plymouth; Mr. Evelyn, new garage, rear of 2, Thornhill-road, Plymouth, Savoy Picture House Co., Ltd., alterations to St. James' Hall, Plymouth.

ROTHERHAM.—Plans passed by T.C.: W. Lodge Winter Hill-lane, stable premises; R. Jenkins & Co., Ltd., Wortley-road and Wilton-gardens, extensions to workshops; N. C. Saul, Old Wortley-road, Kimberworth.

SALFORD.—Plans passed: Construction of offices and store, Leigh-street, Salford; coal store, Cook-street, Salford; stores and workshop, Back Hulme-street, Salford; motor garage, 67, Acresfield-road, Pendleton; builders' workshop, Constance-avenue, Pendleton; sanitary accommodation, works, Orchard-street, Pendleton; calender room, works, St. Luke's-road, Pendleton; erecting shop, works, Statham-street, Pendleton; drying shed of coffin works, Picton-street, Broughton; engine house, works, Picton-street, Broughton; motor repair works, Upper Camp-street, Broughton; motor garage, "Parkfield," Bury Old-road, Broughton; garage, Holden-road, Broughton. Additions to works, Ordsall-lane, Salford; rebuilding of premises, Flax-street, Salford. Alterations to Waste Picture Hall, Eccles New-road; works, Dickinson-street, Salford; works, Chapel-street, Salford; "Old Nelson Inn," 285, Chapel-street, Salford; house, Mandley-park, Higher Broughton; shop, 186, Eccles New-road, Pendleton. Extension of works, St. Luke's-road, Pendleton; works, Harrison-street and Percy-street, Pendleton.

SOUTH SHIELDS.—Plans passed by T.C.: Mr. H. Chapman, jnr., for Henry Chapman, J.P., alterations to residence, "Combe Lea," Westoe Village; Messrs. T. Hanning, for the Middle Docks and Engineering Co., Ltd., for labourers' store and lorry house, at Middle Docks, East Holborn; Mr. H. Hill, for Mr. J. T. Armstrong, house, store and offices, Cranford-street; Mr. H. Hill, for Mr. L. P. Nelson, stabling, &c., back Charlotte-terrace; Mr. H. Hill, for Messrs. J. Pearlman & Sons, re-roofing of cart shed, back Winterbottom street; Mr. J. H. Morton, for Messrs. Tate, Young & Co., extension to workshop, Swan-lane; Mr. J. H. Morton; for Mr. R. Burton, Revesby-street; Mr. J. H. Morton, for Mr. T. Christenson, cart shed, 100, Livingstone-street.

STRETFORD.—Plans passed by U.D.C.: Eight houses, Knutsford-avenue, for the Artistic Housing Co., Ltd.; motor works, Warwick-road North, for the Albion Motor Car Co., Ltd.; two workshops, off Warwick-road North, for Messrs. W. T. Glover & Co., Ltd.; extension to works, Westinghouse-road, for Messrs. Redpath, Brown & Co., Ltd.; works, Elsinore-road, for the Wardle Engineering Co.; extension of works, Elsinore-road, for Messrs. Norbury, Natzio & Co., Ltd.; two houses, Barton-road, for Messrs. Hazeltine & Travis works building, Westinghouse-road, for the British Alizarine Co.; garage, Ashburton-road, for Mr. E. W. Binns; addition to garage, Talbot-road, for Messrs. Brown & Hughes; garage, adjoining 1244, Chester-road, for Mr. Samuel R. Teggin; store and mess room, Sun Mills, for the Co-operative Wholesale Society, Ltd.; workshop, Skerton-road, for Messrs. Chas. W. Cook, Ltd.; garage, Johnson-street, for Messrs. John Stevenson & Son, Ltd.

TIPTON.—It is proposed by the Harper-Bean Combine to build in the near future a considerable number of houses for their employees at the Tipton Motor Works. A new story is to be added to a part of the factory premises.

WEST HAM.—Plans passed by B.C.: Rebuilding 351–356, High-street, North & Robin and P. T. Wilsdon; office addition, Ceres Works, Warton-road, Mr. A. E. Symes; iron roof over boilers, 101, Carpenters-road, Stratford, the Foster Construction Co., Ltd.; offices, Whitford & Co.'s premises, Burford-road, Mr. W. Stewart; boiler house extension, Nonpareil Laundry, Chandos-road, Mr. G. W. Beale; addition to mill room and colour store, Lorilleux & Bolton's premises, Carpenters-road, Mr. W. J. Cearns; two foremen's cottages, Smithfield Animal Products', Ltd., premises, Marshgate-lane, Mr. A. Smith; additions to factory, Holbrook & Son's premises, Martin-street, Messrs. G. & E. Hosking; addition to Mess room, premises at Marshgate-lane, Charing Cross, West End & City Electricity Supply Co., Ltd.; and bridge, spiral staircase and alterations to premises in Ward-road, Mr. P. Cornish; addition to 19 Building, Plaistow Wharf, Victoria Docks, A. Lyle & Son; cooperage and drying shed, Crows-road, West Ham, the Gas Lighting & Improvement Co.; sanitary accommodation, rear of Nos. 1A, 2A, and 3A, Sebert-road, Forest Gate, Mr. F. E. Bache; alterations, 396, Green-street, Upton Park, Mr. A. H. Middleton; addition, general office, Keiller & Sons' premises, Silvertown, J. T. Luton & Son; furnace houses, British Glass Industries', Ltd. premises, Stephenson-street, Canning Town, Major L. H. G. Stanbrough.

WINDSOR.—Plans passed by R.D.C.: Addition to "The Follies," Ascot, for Mr. H. Charman; addition to "Englemere" Wood Lodge, Ascot, for Mr. H. Charman.

WOLVERHAMPTON.—Plans passed by T.C.: Wolverhampton and Dudley Breweries, Ltd., rebuild "White Hart" public-house, Worcester-street and Great Brick-kiln-street; Mr. E. R. S. Reed, rebuild front of stables, Clifton-street; Orme, Evans & Co., Ltd., roof over offices, Great Brick-kiln-street; Mander Bros., re-erect offices, &c., St. John's-street; Mr. E. Pugh, wash-house, &c., 433, Dudley-road; Mr. J. A. George, alterations, 440, Dudley-road; Messrs. Smith & Co., additions, Horseman-street; Messrs. D. Edwards & Sons, workshop, Stafford-street; Mr. D. Jones, sanitary improvements, Pountney-street; Mr. E. Thorneycroft, shop extension, Bennett's Fold; Wolverhampton and Dudley Breweries, Ltd., additions to "Wheatsheaf" Hotel, Market-street; Staffordshire Engineering and Boiler Covering Co., workshop, Chillington Fields; Messrs. W. & A. Jeffs, Ltd., covered yard, Bilston-street; Mr. H. Lockley, shed, 56, Cross-street South; Walsh Nicholls & Co., workshop, Dudley-road.

WORTHING.—Plans passed by T.C.: Four houses, Harrow-road, Mr. T. R. Hyde, for Mr. F. Knight; rectory, Broadwater-road, Mr. A. M. Bulter, for Mr. E. J. Elliott; motor garage, "Charleville," Marine-parade, Mr. H. M. Potter, for Mr. Watkins; additional story to the Park-crescent Laundry, Park-crescent, Mr. B. J. Blaker, for Mr. D. Chorley; Conversion of

* See also our List of Competitions Contracts, &c.

part of ground floor of 1, Chapel-road into lock-up bank premises.—Messrs. G. J. Hagger & A. M. Butler, for Messrs. Barclay, Ltd.; two-story addition to "Tintern," Warwick-gardens, Mr. T. R. Hyde, for Mr. A. V. Heathcote; stable, North-street and High-street, Mr. H. W. Sandell, for Messrs. Pickford & Co.; addition to the rear of 35, South-street, Messrs. Jordan & Cook; six houses, West-avenue, Mr. B. J. Blaker, for Mr. A. E. Child; addition, Grange Auxiliary Hospital, Marine-parade, Mr. A. M. Butler, for the Grange Hospital.

FIRES.

NEWCASTLE.—A serious fire has occurred on the premises of White & Co., Ltd., Sandyford-road.

PAISLEY.—Fire broke out in the weaving factory of D. Wilson & Co., Abercorn-street, and the total loss is estimated at between £3,000 and £4,000.

SHEFFIELD.—Damage to the extent of £1,000 has been done by fire to the premises of W. Hutton & Sons, silversmith, West-street.

ST. LEONARDS.—Messrs. Draper's steam flour mills at St. Leonards, have been destroyed by fire.

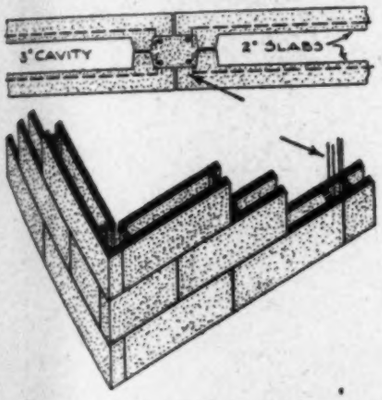
NEW INVENTIONS.

A New Hollow Concrete Block.

A NEW type of hollow concrete block is being developed by Messrs. Hollow Concrete (11, Queen Victoria-street, E.C. 4). These blocks have been approved by the Ministry of Health. The blocks are solid in appearance and full-faced on all six sides, the thickness of the walls being proportioned in accordance with the loads to be carried. The blocks can be made in any shape and size. From tests carried out it is ascertained that the fracturing load of the blocks, with the minimum amount of material, is over 50 tons per square foot, or 800 lb. per square inch of block surface. The blocks are manufactured without special machinery, standard moulds only being required.

Walling Slabs.

The patent walling slabs illustrated on this page are manufactured and employed by the Whitehall Concrete Co. (Whitehall, Leeds), in conjunction with other pre-cast units—beams,



floor slabs, heads, sills, &c. The slabs are 36 in. × 12 in. × 2 in., and are reinforced with expanded metal turned into the cavity forming the columns. The projecting ribs are cast either at the ends or at the centre of the slabs, thus enabling a continuous column to be formed whilst an alternating joint is obtained in the walling courses. The slabs are manufactured from selected and screened hard clinker, the outer slabs being made waterproof and the internal slab non-waterproof. It is claimed that one unskilled but experienced man can erect eight to nine super. yards of cavity walling per day. The slabs have a rough-cast appearance.

Reconstruction in France.

The Commercial Motor Users' Association has made arrangements with the Department of Overseas Trade, whereby motor haulage contractors who desire to send their motor lorries to the Continent for work in connection with reconstruction may do so without having to deposit cash in respect of the 70 per cent. *ad valorem* Customs Duty. The French Director-General of Customs has agreed to accept a written guarantee from the Association in respect of such deposit.

TENDERS

Communications for insertion under this heading should be addressed to "The Editor," and must reach him *not later than first post on Wednesday.*

* Denotes *accepted.* †Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*
§ Denotes *accepted subject to modifications.*

BIRMINGHAM.—For the supply of clinker breaking machinery in connection with the erection of houses for the Corporation :—

*Heenan & Froude, Ltd.	£3,600 and £3,050
W. H. Baxter, Ltd.	2,563 15s. and 2,480 10s.

CHELMSFORD.—For the construction of certain road works at the Borough Cemetery, for the T.C. Mr. Percival T. Harrison, Borough Engineer, Municipal Offices, Chelmsford :—

*W. & C. French, Buckhurst Hill	£565 13 9
A. J. Arnold, Chelmsford	805 3 6
T. Adams, Wood Green	766 0 6
P. G. Gunner, Chelmsford	650 0 0
H. Potter, Chelmsford	621 0 0

DONCASTER.—For reconstructing and raising level of the Bentley tramway track —

*Edwards & Co., Doncaster	£2,790 4 6

EPPING.—For erection of 20 houses at Roydon, for the R.D.C. :—

Walter Jones & Co., Westminster	£15,573 16 1

(Consideration deferred).

EXETER—For houses on the Princes Garden Site, for the Corporation. Mr. John Bennett, City Architect, Exeter :—

*W. Brealy, Exeter	11 houses at £899 each
*G. Herbert & Sons, Exeter	6 houses at £877 each

HAMPSHIRE.—For the adaptation of army huts for school purposes, for the Southampton C.C. as follows :—

Aldershot Secondary :	
Temporary building—*J. Crockerell	£646 0 0
Basingstoke High School for Girls :	
Temporar building—*Milsom & Son	210 1 0
Itchen Shoi ng Secondary :	
Temporary buildings—*J. Nichol	677 0 0
Teacher's house—*W. A. Fussell	416 0 0
Fencing—*J. Nichol	459 12 0
Lock's Heath Council :	
Temporary b ilding—*Newbury & Sons	145 0 0
Winchester County School for Girls :	
Temporary building—*H. G. Ross	150 19 2

HEMINGBOROUGH.—The land agent of the East Riding of Yorkshire C.C. has arranged with Mr. William Tune, builder, Osgodby, to undertake the work in connection with the erection of 4 new houses and 5 sets of farm buildings at Babthorpe Farm, Hemingborough, on the basis of a fixed profit of £400. Mr. Tune to provide tackle, and the County Council to provide all materials and labour at cost price.

LEEDS.—For painting Cromer House day nursery, for the City Council :—

*Carter and Frankland	£102 13

LEEDS.—For painting works at parks and recreation grounds, for the Corporation :—

*W. H. Pitts, Chapel-Allerton	£90 8 3
*W. H. Firth, Stanningley and New Wortley Recreation Grounds	126 8 3
*W. H. Firth, Armley and Western Flatts Park	141 9 6
*J. R. Hurdus, Burley Park and Woodhouse Moor	53 4 6
*W. H. Pitts, Roundhay Park	187 13 9
*P. A. Cawthron, Gross Flatts Park	65 5 0
*P. A. Cawthron, East End Park and Harehills Recreation Ground	104 11 6

LONDON.—For erection of 300 houses on the Northern Housing Estate of the Hammersmith B.C. :—

Tenderer.	Cost per House. (100 house basis).	Cost per 100 Houses.	Cost per House. (200 house basis).	Cost per 200 Houses.	Cost per House. (300 house basis).	Cost per 300 Houses.
	£	£	£	£	£	£
*National Improved Housing Co., Ltd.	753	75,316	739	146,866 2 0	715	214,615
Unit Construction Co., Ltd.	1,000	100,000	1,000	200,000	1,000	300,000
W. Alban Richards & Co., Ltd.	946	94,600	942	188,400	940	282,000
Walter Jones & Sons	773	77,300	770	154,479	772	231,666

GILDERSOME.—For the erection of a block of three houses on the King's Arms Estate. Mr. T. A. Buttery, architect and surveyor, Queen-street, Morley :—

*Grayshon Bros., Adwalton, near Bradford—Mason	£1,079 9 2
*Grayshon Bros.—Diversion of drain	96 0 0
*W. Ventress & Son, Gildersome—Joiners	638 0 0
*T. & A. Donnelly, Leeds—Plumbers	269 0 0
*Pickles Bros., Horsforth—Slater	122 0 0
*J. Iredale & Son, Birstall—Plasterer	155 12 0
*J. Iredale & Son—Concretor	102 0 0

GLASGOW.—For the erection of 316 houses of various types on the Kennyhill and Riddrie areas, for the Corporation :—

*Thaw & Campbell—Brick work	£109,762 10 0
*Duncansons, Ltd.—Joiner	101,030 10 0
*C. Wilson—Slater	19,638 4 0
*Twaddle & Son—Plumber	45,322 13 10
*M'Intyre & Co.—Plaster	21,166 9 11
*Wm. Purdon & Son—Glazier	1,658 11 0
*Norfolk Decorators—Painter	6,751 8 5

GLASGOW.—The original tenders for additional houses at Gilschochill for the Corporation have been extended as follows :—

*G. Newton & Sons—Mason work	£14,483 17 4
*Duncansons, Ltd.—Joiner	11,989 3 11
*P. White & Co.—Slater	2,474 7 1
*H. Twaddle & Son—Plumber	5,615 10 2
*H. S. Bathgate—Plaster	1,792 16 6
*Wm. Purdon & Son—Glazier	197 4 6
*Norfolk Decorators—Painter	962 9 1

GLASGOW.—For the necessary street works on the Gilschochill housing site, for the Corporation :—

*Crawford Bros., Larg	£5,351

GREENOCK.—For the formation of streets and the construction of sewers in connection with the housing scheme, for the Corporation of Greenock. Mr. Robert Millar, Borough Surveyor :—

*Charles McAndrew, 4, Park-terrace, Ayr	£3,969 5 7
Craneford Bros., "Dunedin," Largs	5,770 14 0
R. Aitkenhead & Sons, 37, Trafalgar-street, Greenock	5,796 0 3
George Duncan & Son, Cathcart, Glasgow	5,823 13 6
A. F. Reid & Co., 30, Gordon-street, Glasgow	6,694 17 9
Adam Duncan, 147, Nithsdale-road, Pollockshields, Glasgow	7,419 5 4

LONDON.—For warehouse and jetty at Blackfriars Bridge, S.E., for Messrs. England's Shipping Service. Messrs. Ridge, Greaves & Ridge, architects, 123 and 124, Newgate-street, E.C. :—

*Wm. S. Shepherd, Kingston-on-Thames	£50,000

LONDON.—Additions, alterations, and redecorations at 8, Melina-place, N.W.8. Messrs. Taylor & Clark, architects. Quantities by Mr. Charles H. Taylor.

W. F. Bertie	£1,647 16 0
Green & Smith	1,650 0 0
Dack & Co.	1,719 18 4
Courtney & Fairbairn	1,799 0 0
J. Myring & Co.	1,960 0 0

NEWTON ABBOT.—For carrying out work of water supply for Bovey Tracey, for the R.D.C. :—

*T. Rearsley, Leigh	£6,582 10

PARK PREWETT.—For (*a*) tar paving and making up roads and (*b*) fencing at Park Prewett Asylum, for the Southampton C.C. :—

*J. Wainwright & Co., Shepton Mallett (*a*)	£7,140 12 6
*Bayliss, Jones & Bayliss (*b*)	4,038 3 9

ROTHERHAM.—For construction of roads and sewers on Section D of Doncaster-road Housing Site, for the Corporation: —

*E. T. Small & Co., Ltd.	£15,200 0
W. H. Treherne, Ltd.	15,422 0
J. E. Nadin & Son, Ltd.	15,504 13
Wellerman Brothers, Ltd.	15,920 0
J. W. Hadfield	16,336 12

SALFORD.—For the erection of a tuberculosis sanatorium at Nob Top Farm, Marple, for the Corporation :—

*J. Gerrard & Sons, Swinton	£69,900

SALFORD.—For supply of 200 tons of 4 in. by 6 in. granite setts, for the Corporation :—

*Enderley & Storey, Stanton Granite Co.	68s. per ton

SKIRLAUGH.—For alterations and additions at Silver Hall Farm, for the East Riding of Yorks C.C. :—

*W. Turner, Skirlaugh	£467 12 6

STRETFORD.—For reinforcement of Warwick-road bridge, for the U.D.C. :—

*British Reinforced Concrete Engineering Co.	£3,305 2 6

STRETFORD.—For laying out of Gorse Park site, for the U.D.C. :—

*Bethell & Sons, Sale	£3,736 0 10; £1,713 19 6; and £6,329 16 4.

NEW COMPANIES.

The particulars quoted below have been compiled by Messrs. Jordan & Sons, Ltd., Company Registration Agents, 116 and 117, Chancery Lane, W.C.2, from the documents available at the Companies Registry:—

BARKING ESTATES AGENCY, LTD. (162,002). Registered December 23, 1919. 73A, Glenny-road, Barking. Architects and surveyors, estate and insurance agents. Nominal capital £500.

BRITISH LOCK SLAB CONSTRUCTION CO., LTD. (161,464). Registered December 10, 1919. Prudential Buildings, Market-place, Dewsbury, York. Nominal capital £10,000.

BUILDERS' REQUISITES, LTD. (161,882). Registered December 19, 1919. 72, Shaftesbury-avenue, W. Nominal capital £2,000.

CANVEY SUPPLY CO., LTD. (162,067). Registered December 24, 1919. Laurence Yard, Small Gains-road, Canvey, Essex. Builders' merchants. Nominal capital £5,000.

CENTRAL BUILDING CO. (BARKING), LTD. (161,385). Registered December 8, 1919. 75, Glenny-road, Barking, Essex. Nominal capital £2,000.

COLLIER & SON (NORTHAMPTON), LTD. (162,061). Registered December 23. Spinney-hill, Northampton. Builders and contractors. Nominal capital £10,000.

D. P. W. HOUSE CONSTRUCTION CO., LTD. (161,353). Registered December 6, 1919. 88, Ronald Park-avenue, Westcliffe-on-Sea. Nominal capital £2,500.

FAIRBROTHER BUILDING AND CONSTRUCTION CO. (ENGLAND), LTD. (161,914). Registered December 20, 1919. Central House, Kingsway, W.C. 2. Nominal capital £6,000.

J. GREATOREX & SON, LTD. (162,117). Registered December 29, 1919. Harvey Dale, Mountain Limestone Quarry, Matlock. Stone merchants and manufacturers and contractors for paving materials. Nominal capital £20,000.

JOHN HARDMAN & CO., LTD. (161,721). Registered December 16, 1919. Manufacturers of coloured glass and stained-glass windows. Nominal capital £12,000.

HUME PIPE & CONCRETE CONSTRUCTION CO., LTD. (162,080). 80, Finsbury Pavement, E.C. 2. Registered December 24, 1919. Nominal capital £610,000.

LORDSWOOD BRICK CO., LTD. (159,244). Britannia Wharf, Marine Parade, Southampton. Registered October 1, 1919. Nominal capital, £2,000.

JOHN MCMANUS, LTD. (161,636). Registered December 13, 1919. Building contractors and public works contractors. Nominal capital £50,000.

MODERN HOMES CONSTRUCTION CO., LTD. (160,616). Registered November 16, 1919 Prudential Chambers, Castle-street, Swansea. Builders, Builders' merchants, timber merchants and importers. Nominal capital £50,000.

TRADE NEWS.

Now that accommodation of all kinds is so urgently required, new and alternative methods and materials are being extensively used in constructional work, and the output of the slate and tile industry is at present so low that all systems of roofing must be considered. One of these new systems is asbestic slate, manufactured by the British Roofing Co. (150, Southampton-row, W.C. 1). Over one million feet of this material are now in use. In addition to roofing, it is suitable for lining external walls, partitions and ceilings. It is claimed to be fire and rot resisting, and unaffected by damp, acids or chemical fumes. An important point at the present time is that immediate delivery is guaranteed.

The balance-sheet of London County, Westminster and Parr's Bank, Ltd., shows that current deposits amount to £304,547,727. The reserve fund stands at £8,750,000, and the authorised capital at £33,000,000, of which £8,503,718 has been paid up. The net profit for the past year was £2,832,567, including £377,560 brought forward. After placing £1,000,000 to the investment depreciation account, £165,721 to the reserve fund, £100,000 to the premises account, £100,000 to the war memorial fund, and paying a dividend of 20 per cent. for the year, a sum of £414,226 is carried forward.

The January issue of the classified list of second-hand scientific instruments for disposal by Mr. C. Baker, of 244, High Holborn, W.C., contains particulars and prices of over 1,500 instruments, including a large number of tools and instruments used in the architectural and surveying professions, and modern photographic apparatus. The catalogue will be forwarded on application.

Messrs. Building Products, Ltd., specialists in auxiliaries for concrete construction, have removed to Columbia House, 44-46, King's-road, Sloane-square, S.W. 3.

Messrs. Winget Ltd., have removed from 25, Victoria-street, S.W.1, to 24, Grosvenor-gardens, S.W. 1. Telephone: Vic. 8234 and 8235.

Sulphur in Benzole.

At the request of the National Council of the Commercial Motor Users' Association (Inc.), the Petroleum Executive and the Aeronautical Inspection Department last year undertook investigations as to the effect of sulphur in benzole on various metals. The specification of the National Benzole Association, it should be noted, fixes 0.4 per cent. of sulphur as the maximum. The report states that there is no evidence that the sulphur in benzole (there is no free sulphur) has any corrosive effect on carburettors.

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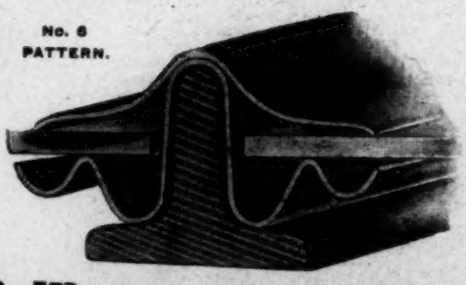

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